

Marchand (G.)

THE THERAPEUTICAL APPLICATIONS
OF
PEROXIDE OF HYDROGEN

(MEDICINAL),

AND GLYCOZONE

✓ BY
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TREATMENT OF DISEASES CAUSED
BY
GERMS, BACTERIA, MICROBES.

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RELATIONS

OF

BACTERIA TO DISEASE.

THE branch of science named Bacteriology was opened to the medical profession by the classical researches of Prof. Pasteur in the settlement of the question of spontaneous generation, and in his subsequent studies of the process of fermentation. With the investigations of that distinguished French *savant* began our first positive knowledge of the definite relations of bacteria to disease in the animal kingdom.

Prof. Robert Koch, of Berlin, has contributed widely by his experiments to the progress in knowledge of the etiology of infectious and contagious diseases.

Owing to the methods which he has devised in order to practically and easily isolate different species of bacteria, we are now enabled to follow the phases of their development in pure cultures, under varying circumstances.

Microscopical examinations show that, during the various stages of their life, bacteria present different forms and dimensions ; but it is also demonstrated that one species of bacteria, placed under the same circumstances, always present the same forms, and produce the same effects.

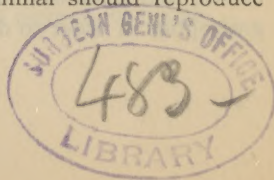
Bacteria are principally constituted by an albuminoid substance, called microproteine.

The pathogenic bacteria only are of the greatest interest to the physician, and, according to the definition given by Prof. Koch, a micro-organism is pathogenic when it presents the following characteristics :

First—It must be found in the excretions, secretions, or tissues of the animal suffering or dead from the disease.

Second—The micro-organism must be cultivated out from the organism.

Third—A pure culture inoculated in an animal should reproduce the disease.



Fourth—The bacteria should be found in the humors or tissues of the animal after death.

Pathogenic bacteria are differently affected in their infective power by the soil in which they grow ; some of them have a limited or local action, and others produce the infection of the whole system with a prodigious rapidity.

These facts have been demonstrated from microscopical examinations ; for example, the autopsy shows that the blood of a patient who died from Diphtheria is invaded with a large number of microbes called micrococci, the same microbes being detected also in the diphtheritic membrane, which was at first the seat of this infectious disease.

The microscopical examination of the blood of a patient who died from Anthrax shows the presence of the *Bacillus Anthracis*, which was at first found only in the excretions or pus coming from the infected surface.

Consequently, the contagion is not always immediate. During this period of localization of the disease, the microbial element should be destroyed by a proper medication, in order to prevent its propagation through the whole system.

Micro-organisms or germs in the atmosphere have been shown by Ehrenburg to exist in masses or clouds ; so that, in a room containing infection, a portion of the air may be loaded, while other portions are nearly free, which would seem to explain cases of escape from septic or zymotic influences.

It is owing to the presence of these micro-organisms that Profs. Pasteur, Koch, Tyndall, and others have been able to establish the germ theory of disease.

Diseases caused by Germs or Microbes.—It is to the micro-organisms we are indebted for Catarrh, Ozæna, Hay Fever, Diphtheria, Croup, Sore Throat, Quinsy, Tonsilitis, Bronchitis, Whooping-cough, Laryngitis, Pharyngitis, Pneumonia, Consumption, Catarrh of the Stomach, Women's Weaknesses, Whites, Leucorrhœa, Typhoid Fever, Scarlet Fever, Measles, Small-pox, Skin Diseases, Yellow Fever, Cholera, Abscesses, Carbuncle, Ulcers, Gonorrhœa, Syphilitic Sores, and other chronic affections.

It is no wonder, after becoming acquainted with such facts as the above, that scientists have studied with such care the properties of antiseptics in order to destroy the germs.

Destructive Action of Ozone upon the Virus.—A fact known by bacteriologists and chemists is that: All virus is albuminoid, whether propagative or not; it is destroyed, or by coagulation rendered inert, by the oxidizing action of "Ozone," just as it is by contact with corrosive sublimate and other antiseptics.

Then, it is evident that if some substance could be produced which would oxidize or destroy these micro-organisms, so as to change their infectious character, a great benefit would result, providing this destroyer of germs would have no injurious consequences upon the life of animals.

Such a substance we have in ozone, O_3 ; or condensed oxygen, $O_2 + O$. It is nature's disinfectant.

Houzeau found the air of the country at the height of six feet above the ground to contain $\frac{1}{450000}$ of its weight of ozone, or $\frac{1}{700000}$ of its volume.

This very small quantity of ozone is sufficient, owing to its wonderful oxidizing power, to destroy germs.

"Ozone" is a normal constituent of fresh air; its proportion varies with temperature and electric conditions of the atmosphere.

Billard, Wolf, Boeckel, and Strambes agreed that the cholera, when it raged in Strasbourg, Berlin, and Milan, coincided with the absence of ozone in the atmosphere, and that ozone reappeared at the end of the epidemic.

These observations are in perfect accord with those obtained by Dr. F. H. Hammond. Dr. Moffatt, Romain Vigouroux, Uhle, and numerous other scientists also attribute the prevalence at time of cholera, malarious fever, to the absence of ozone in the air.

Is it due to an excessive production of miasms relatively to the normal proportion of ozone, or is it because "Ozone" is in deficiency to destroy these germs?

No one could answer this question, but the positive fact is that: "If Ozone is in excess, there is no epidemic."

The wonderful antiseptic value of "Ozone" has attracted the attention of all scientists, and a number of chemists have devised different methods of its production; but no one of these processes could be used to manufacture ozone industrially.

We have in Peroxide of Hydrogen, H_2O_2 , a substance which is always on a strain to break up into water and nascent oxygen, or ozone.

This fact, that Peroxide of Hydrogen generates "Ozone," is proved by experiments which I have made in order to establish the comparative chemical reactions between these two wonderful bactericides, and I now submit to the profession the results which I have obtained :

COMPARATIVE CHEMICAL REACTIONS BETWEEN MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL), H_2O_2 , AND OZONE (FORMULA O_3).

Iodide of Potassium Solution in presence of	H_2O_2 Solution.	Result of reaction :	{ Potash and Iodine.
	Ozone.	Result of reaction :	{ Potash and Iodine.
Permanganate of Potash Purple Solution in presence of	H_2O_2 Acidulated Solution.	Result of reaction :	{ Immediate decoloration. Escaping of Oxygen Gas and formation of brown Oxide of Manganese.
	$Mn_2O_8 K_2 + 2 H_2O_2 = 2 KHO + Mn_2O_4 H_2 + O_6$ Ozone.		{ Same reaction.
Peroxide of Iron Salt Solution and Ferricyanide of Potassium Solution mixed together in presence of	H_2O_2 Solution.	Result of reaction :	{ Ferricyanide is transformed into Ferrocyanide of Potassium, giving a blue coloration.
	Ozone.	Result of reaction :	{ Same result.
Tincture of Indigo in presence of	H_2O_2 Solution.	Result of reaction :	{ Decoloration.
	Ozone.	Result of reaction :	{ Decoloration.
Nitrous acid in presence of	H_2O_2 Solution.	Result of reaction :	{ Formation of Nitric Acid.
	Ozone.	Result of reaction :	{ Same result.
Arsenious Acid in presence of	H_2O_2 Solution.	Result of reaction :	{ Formation of Arsenic Acid.
	Ozone.	Result of reaction :	{ Same result.
Tincture of Guaiacum mixed with either Blood or Extract of Malt.	H_2O_2 Solution.	Result of reaction :	{ Blue coloration, with effervescence and coagulation of albumen.
	Ozone.	Result of reaction :	{ Same reaction.
Organic substances such as Cotton, Woollen, Silk, Feathers, Hair, Bones, Ivory, etc., in presence of	H_2O_2 Alkaline Solution.	Result of reaction :	{ Oxidizing and Bleaching Action.
	Ozone.		{ Same result but slower action.

Organic substances in a decomposing state such as Meat, Fish, etc., mucous discharges, Bacteria, etc., in presence of	H ₂ O ₂ Solution.	{ Immediate decomposition of H ₂ O ₂ producing nascent oxygen (or ozone); coagulation of albuminoid substances; destruction of pus and bacteria; absolute disinfection locally as well as in the surrounding atmosphere. Water and Oxygen Gas are the results of the above reaction.
	Ozone.	{ Same result. Ozone transformed into Oxygen.
Phosphorous Acid in presence of	H ₂ O ₂ Solution.	{ Formation of Phosphoric Acid.
	Ozone.	{ Same result.
Sulphurous Acid in presence of	H ₂ O ₂ Solution.	{ Formation of Sulphuric Acid.
	Ozone.	{ Same result.
Blood and Albumen in presence of	H ₂ O ₂ Solution.	{ Effervescence, oxidation, and coagulation of the Albumen.
	Ozone.	{ Same result.

IMPORTANT INFORMATION ON PEROXIDE OF HYDROGEN.

Pure anhydrous Peroxide of Hydrogen yields four hundred and seventy-five volumes of oxygen; that is, it gives off four hundred and seventy-five times its own volume of oxygen. It is a very unstable liquid compound, having by itself a slight acid reaction to the litmus paper. Its decomposition into water and oxygen takes place under the most enigmatical influences. Hence it is not an article of commerce. Charles Marchand's Peroxide of Hydrogen (medicinal) is really a $3\frac{1}{8}$ per cent. solution of the anhydrous peroxide in water; 1 per cent. solution yields 4.75 times its own volume of oxygen. Consequently, the Peroxide of Hydrogen (medicinal) which I manufacture yields " $3\frac{7}{8}$ times 4.75" its own volume of oxygen; viz., a trifle more than fifteen times its own volume of oxygen gas. It is called a 15-volume solution.

Owing to the unstableness of this compound, my medicinal preparation is acidulated with $\frac{1}{8000}$ of hydrochloric acid and $\frac{1}{10000}$ of phosphoric acid. The acid is indispensable in order to preserve the solution from rapid decomposition, and it is unnecessary to neutralize these traces of acid, before use, even in the most delicate cases.

All injurious chemicals are eliminated from Charles Marchand's Peroxide of Hydrogen (medicinal). It is a colorless, almost tasteless, and odorless liquid. Being kept in a cool place, such as a cool cellar or a refrigerator, it will not deteriorate, and will keep for any length of time.

The fifteen volume solution of Peroxide of Hydrogen (medicinal) freezes at the temperature of 10° to 11° Fahr.; in this event, thaw it out slowly at a temperature not exceeding 70° Fahr., and it will not lose any of its strength.

Testing Process.—The following is the testing process which I recommend to the physician :

The standardizing test solution is made by dissolving 3,704 grammes of permanganate of potash in distilled water, and making up the measure to 1,000 cubic centimetres. Each cubic centimetre of this solution corresponds to one volume of oxygen (formula O) when applied to one cubic centimetre of any solution of Peroxide of Hydrogen.*

The test is made by adding to about 50 or 60 cubic centimetres of water, acidulated with 2 cubic centimetres of pure sulphuric acid, a cubic centimetre of the peroxide of hydrogen solution to be tested. Into this, with constant stirring, is dropped, from a graduated burette, the permanganate solution until the color of the permanganate ceases to be discharged.

Each cubic centimetre, and fraction of a cubic centimetre, required to reach this point, indicates one volume and fraction of a volume of oxygen that is available in the solution tested.

Pure anhydrous peroxide of hydrogen, H_2O_2 , being submitted to the above-mentioned test, shows that one cubic centimetre of it contains 475 cubic centimetres of oxygen gas (formula O); but it would be erroneous to say that it contains 475 cubic centimetres of "Ozone" (formula O_3), or condensed oxygen, $O_2 + O$.

* The reader will notice that I do not refer to "one volume" of ozone (formula O_3), or condensed oxygen ($O_2 + O$), but I say, positively, "one volume" of "oxygen" (formula O).

The results of my experiments, published on page 4, prove that oxygen exists in peroxide of hydrogen in its allotropic state, called "ozone" or "condensed oxygen."

Action of Charles Marchand's Peroxide of Hydrogen upon Infected Surfaces.—When Peroxide of Hydrogen (medicinal) is brought into contact with any diseased surface, either of the skin or of the mucous membranes, its decomposition takes place immediately, and at first "ozone," which is the result of this reaction, coagulates the albuminoid matters of the secretions, the pus is destroyed, and also the bacteria. As soon as "ozone" has accomplished its cleansing effects upon the infected surface, it is readily transformed into ordinary oxygen, owing to its instability.

It is of great importance to notice that water, charged with fifteen times its own volume of oxygen gas (formula O) under pressure, has no similar action whatever on the albuminoid substances, as there is no coagulation, and no cleansing effects upon the unhealthy secretions of the infected surfaces.

This remark was necessary in order to establish plainly the difference between the therapeutical value of Peroxide of Hydrogen and the Oxygen or the Compound Oxygen treatments.*

Although Ch. Marchand's Peroxide of Hydrogen (medicinal) is recognized by leading physicians (see the opinions of the medical profes

* Concerning the so-called "Compound Oxygen treatment," I shall refer the profession to a very elaborate report on :

"The Management of Pulmonary Diseases," by Karl von Ruck, B.S., M.D., Director of the Winyah Sanitarium for Diseases of the Throat and Lungs. Ashville, N. C., 1889. On pages 8 and 9 of this publication, the author writes as follows :

"*Inhalation of Oxygen.*—Undoubtedly some benefit has been derived from such inhalations in anæmia and digestive derangements, also in certain forms of dyspnœa I have seen patients made much more comfortable after each inhalation, especially when a small quantity of nitrous oxide was added. I have also seen an occasional but undoubted increase in the number of red blood-corpuscles under its administration, both in essential and symptomatic anæmia, especially when iron preparations, which alone had proved inefficacious, could be administered at the same time. Its range of usefulness in consumption is secondary altogether to many other means, and it is only occasionally that anything more than temporary relief can thereby be given, and, no matter how plausible the theory as to its influence upon nutrition, practical experience shows that its use is always experimental, and frequently without result, the same as is the case in its employment in other diseases. Its mixture with nitrous oxide, in the form of the so-called 'compound oxygen,' by the temporary stimulating or intoxicating effect of the laughing gas, has no advantage whatever, except in dyspnœa, but it makes the patients who become the victims of charlatans feel that 'something powerful' is present in such inhalations, and induces them to believe in it the more readily. This 'compound oxygen cure for consumption' still flourishes in many localities, the same as do the quack remedies for the same object upon the shelves and counters of our druggists, and I have no doubt the venders of such, with their adver-

sion on page 42) as being the most powerful and reliable antiseptic known, I now beg to submit to the profession the results of comparative tests which I have made, in order to demonstrate experimentally the difference between the bactericide potency of the following chemicals, acting upon a diphtheritic membrane for the destruction of microbes present in half a gramme of the said membrane.

Mixture or solution containing $3\frac{1}{5}$ per cent. of the following chemicals :

QUANTITY OF THE MIXTURE OR SOLUTION REQUIRED TO
ANNIHILATE MICROBES.

	Cubic Centimetres
Glycozone (harmless).....	0.75
Biniiodide of mercury.....	1.00
Biniiodide of silver	1.33
Marchand's Peroxide of Hydrogen, medicinal (harmless).....	2.00
Bichloride of mercury.....	3.00
Nitrate of silver.....	5.00
Hypochlorite of lime.....	9.00
Chlorine gas (aqueous solution).....	10.00
Iodine.....	10.00
Bromine	24.00
Iodoform (when fresh)	28.00
Salicylic acid.....	40.00
Muriatic acid.....	100.00
Carbolic acid	128.00
Permanganate of potash.....	140.00
Chlorate of potash.....	158.00
Alum	180.00
Tannin....	190.00
Common salt.....	196.00
Sulphide of calcium.....	201.00
Boracic acid.....	300.00
Sulphurous acid.....	325.00
Lactic acid.....	360.00
Chloride of iron.....	371.00

Thymol, eucalyptus, bicarbonate of soda, lime-water, turpentine, have no action at all upon the microbes of a diphtheritic membrane

tisements, are as injurious parasites upon the consumptives as are the tubercle bacilli themselves ; and while we must acknowledge that our efforts in phthiso-therapy against the latter have thus far been unavailing, many lives could undoubtedly be saved if the former could be extinguished by the enactment of wise laws which would oblige them to derive their means of livelihood otherwise than by trifling with human-life."

when they are developed ; but they may have, to a certain extent, a preventive action upon the development of the spores.

The permanganate of potash, hypochlorite of lime, bichloride of mercury, the aqueous solution of chlorine gas, carbolic acid, nitrate of silver, etc., destroy the microbes ; but, being poisonous, they have the most dangerous effect upon the patient's life.

It is worthy of note that the medicinal preparations made by Charles Marchand, viz., Glycozone and Peroxide of Hydrogen (medicinal), are absolutely harmless. All other chemicals have toxicant, corrosive, or poisonous properties, as is proved by chemical tests ; and their use is, in many instances, more dangerous than the disease itself.

By referring to the comparative tests published on page 8, it is easy to notice that Charles Marchand's Peroxide of Hydrogen (medicinal), as a bactericide, is $1\frac{1}{2}$ times as strong as bichloride of mercury, $2\frac{1}{2}$ times as strong as nitrate of silver, 5 times as strong as iodine, 14 times as strong as iodoform, 20 times as strong as salicylic acid, 64 times as strong as carbolic acid.*

** The Dangers of Carbolic Acid.*—The following experiments which I have made prove beyond doubt the dangers of applying carbolic acid in the treatment of suppurative diseases.

Six dogs were submitted to the action of this corrosive antiseptic in the following manner :

Two to three square inches of hair on the leg of each animal upon which the experimentation took place was closely shaved.

Morning and evening an application, from 8 to 10 drops (three per cent. solution) of carbolic acid was made upon these prepared surfaces and continued for ten days.

One hour or so after each application the surface was dry, owing to the evaporation of water, and then, as an immediate consequence, it was covered by a small quantity of pure, concentrated carbolic acid, of which the corrosive properties are well known.

At the expiration of said time two of these dogs were sick, each one having an ulcer on the prepared surface of the leg, which was due to the repeated application and evaporation of the three per cent. solution of carbolic acid ; and three days later each one of the four other dogs had an ulcer of the same nature, which was produced from the same cause.

These four dogs were then submitted to treatment by my Peroxide of Hydrogen, which in four weeks thoroughly cured them.

The application of the three per cent. solution of carbolic acid on the ulcers of the two other dogs was again continued, and on the fiftieth and sixty-second day, respectively, both animals expired from blood-poisoning. The autopsy showed that the blood of these animals was invaded by the bacteria of Davaine, which were detected by a microscopical examination.

GENERAL DIRECTIONS FOR APPLYING

CH. MARCHAND'S PEROXIDE OF HYDROGEN

(MEDICINAL), H_2O_2 ,

IN THE TREATMENT OF DISEASES CAUSED BY GERMS.

NOSE.—THROAT AND CHEST DISEASES.—TREATMENT.

CATARRH OF THE NOSE AND CATARRH OF THE THROAT.

Causes.—Micro-organisms, principally of the micrococcus species, have been detected by microscopical examinations, by scientific men, and by myself, in the mucous discharges from the nostrils of persons afflicted with this disease. Those germs which are the cause of the infection are readily destroyed by Charles Marchand's Peroxide of Hydrogen (medicinal), and there is no danger for the patient to use this remedy in any quantity, as it is positively harmless.

Treatment.—By means of an atomizer, made of glass and hard rubber, spray the nose and the throat copiously and repeatedly twice or three times every day with a mixture of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal),
with 4 to 10 tablespoonfuls of water,

according to the degree of inflammation in the mucous membranes of the nasal cavities; and, in case of extreme sensitiveness, use even a still larger proportion of water.

NOTE.—In the absence of an atomizer, apply the remedy to the nose by sniffing the liquid from the hand through the nostrils repeatedly, and gargle the throat. It is always beneficial to swallow some of the remedy.

Do not blow the nose too hard, as it might cause a temporary bleeding.

In chronic cases of long standing, especially at the beginning of the treatment, when the tenderness of the mucous membrane is excessive,

it often happens that the patient will feel, during one hour or so after each application of the remedy, a partial obstruction of either one or the other of the nostrils.

This very unpleasant feeling is often accompanied by frequent sneezing, which is due to the tickling sensation produced in the nasal cavities by the presence of a great quantity of minute bubbles of "Ozone," being set free from the decomposition of Charles Marchand's Peroxide of Hydrogen coming in contact with the infected surface. The unhealthy secretions are destroyed by "Ozone," and the cleansing of the nostrils is made perfect.

In chronic cases, when the middle ear is affected, deafness is very often the consequence of this disease. Then ozonized vapor inhalations should follow immediately the spraying of the nose and the throat, and should be administered by means of Charles Marchand's Hand Atomizer and Ozonizer, with a mixture thoroughly made of

half Marchand's Peroxide of Hydrogen (medicinal)
and half chemically pure glycerine.

Renew this mixture every three days. It is important that the above mixture should be made perfect by shaking the bottle well, otherwise the spray-tube of the apparatus might be clogged on account of the syrupy nature of the glycerine.*

The profession well know that the therapeutical agents used for the treatment of this disease have been as follows :

Bichloride of Mercury.—Calomel.—Sulphate of Zinc.—Sulphate of Copper.—Alum.—Nitrate of Silver.—Carbolic Acid.—Salicylic Acid.—Permanganate of Potash.—Borax.—Boracic Acid.—Subnitrate of Bismuth.—Common Salt.—Muriate of Ammonia.—Extract of Eucalyptus.—Thymol.—Cocaine.—Camphor, etc.

* When chronic Catarrh of the Nose is very tenacious and painful, it is necessary at night, before retiring, to apply a few drops of Glycozone to the nostrils. Sniff it hard, as it will accelerate the cure.

In many cases the incurability of Chronic Catarrh of the Nose is due to partial or complete obstruction of the nasal cavities, caused by some abnormal conditions of growth, differing in their nature.

When such is the case, apply Marchand's Peroxide of Hydrogen, as heretofore explained, morning and evening, and after ten or fifteen days, if the excrescence does not disappear, it will be necessary to have a surgical operation performed for its removal.

A permanent cure may then be effected in a very short time.

After the excrescence has been removed or destroyed by means of the thermo-cautery, or any other operation (*no caustic should be used, as it will most likely destroy both taste and smell*), an absolute cure is certain if the Marchand Peroxide of Hydrogen treatment is earnestly followed.

It is easy to understand why Marchand's Peroxide of Hydrogen (medicinal) will surely accomplish a permanent cure, while the above-mentioned bactericides can give only temporary relief, and they are apt to injure or destroy both taste and smell.

First—Because Marchand's Peroxide of Hydrogen is the most powerful of all antiseptics yet discovered. (See page 8, "Comparative Tests.")

Second—Marchand's Peroxide of Hydrogen (medicinal) is absolutely harmless when applied externally or administered internally.

Third—The borax, boracic acid, subnitrate of bismuth, muriate of ammonia, common salt, camphor, eucalyptus, thymol, are not very dangerous remedies, but their bactericide properties are too limited to destroy the germs which are the cause of the disease.

On the contrary, Marchand's Peroxide of Hydrogen annihilates these germs instantaneously, and it leaves the healthy surrounding tissues in their normal condition.

OSZENA, OR PUTRID CATARRH OF THE NOSE.

In case of Ozoena, Marchand's Peroxide of Hydrogen (medicinal) should be applied three times daily, diluted in the following proportion :

Mix 1 tablespoonful Marchand's Peroxide of Hydrogen
with 4 to 7 tablespoonfuls of water.

It is only in case of extreme tenderness of the mucous membrane that a weaker solution should be used, as follows : Mix 1 tablespoonful of Marchand's Peroxide of Hydrogen with 7 to 10 tablespoonfuls of water.

Spray the nostrils and the throat successively and copiously with this diluted Marchand's Peroxide of Hydrogen, or, in the absence of an atomizer, apply the remedy to the nose by sniffing the liquid from the hand through the nostrils repeatedly, and gargle the throat.

This treatment is so powerful that the destruction of the microbial element takes place immediately, and the putridity which characterizes this peculiar and repulsive affection is arrested three or four days after the beginning of its application.

The cure is ordinarily accomplished in four weeks, but in some instances, when the case is of a very long standing—having become chronic—it requires a longer time to effect an absolute cure.

In case of sneezing and obstruction of the nostrils after each application of the remedy, see the explanations given, page 10, article headed "Catarrh of the Nose." *

Marchand's Peroxide of Hydrogen (medicinal) is the most powerful remedy which can be used in order to subdue this most offensive and very repulsive disease, and it has no injurious or poisonous consequences.

HAY FEVER.—ROSE COLD.—CORYZA.

Causes.—The microscopical examination of the unhealthy mucous secretions and excretions from the nostrils of Hay-fever sufferers demonstrated the presence of small ovoid micro-organisms, which are annihilated instantly when brought into contact with Marchand's Peroxide of Hydrogen (medicinal).

It is worthy of notice that the degree of susceptibility to the infectious action of these germs or microbes differs with different people. The spores and germs which cause this disease do not always find a proper medium for development in the mucous secretions of different people.

The peculiarity of this disease is that any one who is afflicted with Hay Fever can foretell every year, almost to a certainty, the day upon which the disease will begin, and also the day upon which they will get rid of it.

The logical explanation of this is that the conditions of life of afflicted people are always the same ; that is, "the circumstances and surroundings of their existence are absolutely alike from year to year." Thus the microbial causes of the trouble develop under the same influences every year, at about the same time ; and, consequently, the disease begins when the atmospheric conditions become favorable for the development of the spores I have mentioned. These spores grow, under proper conditions of temperature and dampness, in the mucous secretions of the nostrils, the microbial affection takes place, and inflammation and ulceration of the mucous membrane is the consequence.

These micro-organisms continue their growth as long as these favorable atmospheric conditions exist, and they disappear as soon as the temperature falls and while it remains at a lower degree. Then the effects disappear with their causes, and the patient gets rid of his trouble.

* Glycozone should be applied to the nostrils morning and evening, in order to accelerate the cure.

Treatment.—The causes of Hay Fever being now well established, it is easy to understand that any remedy having the property to destroy microbes or germs will surely prevent or cure the disease by removing the cause, providing this antiseptic remedy will have no injurious effects upon the surrounding healthy tissues.

In case of Hay Fever, the remedy should be applied locally to the nostrils as a spray, and also by inhalations, in order to subdue the asthmatic attacks which accompany this very troublesome complaint.

It has been demonstrated that among the list of antiseptic remedies published on page 8, Marchand's Peroxide of Hydrogen (medicinal) is the most powerful bactericide, and it is absolutely harmless.

I have explained on page 7 that : When Marchand's Peroxide of Hydrogen (medicinal) comes in contact with any open and infected surface, either of the skin or the mucous membrane, ozone is set free, the microbes are instantly destroyed, as well as the unhealthy secretions which are caused by their action, and then the diseased surface is thoroughly disinfected and made perfectly clean and healthy. The residue of this reaction is water and a small quantity of coagulated albumen.

In fact, this Marchand's Peroxide of Hydrogen treatment is based upon the indisputable results which are obtained when a Hay-fever patient is going to the White Mountains, where the atmospheric conditions are such that the air contains always a small quantity of ozone. The constant breathing of this ozonized air accomplishes the cure of this disease in a **very short time**.

Hay Fever will always be prevented by an early application of Marchand's Peroxide of Hydrogen (medicinal), in those cases which occur regularly at known periods of the summer. When the disease has developed, the same treatment will check it within three or four days, and the cure is effected in less than two weeks ; but it is advisable to continue the treatment during the whole Hay-fever season.

The remedy should be applied as follows :

First—Spray the nostrils and the throat copiously and repeatedly twice or three times every day with a mixture of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 8 tablespoonfuls of water,

according to the degree of inflammation.

Second—By means of Charles Marchand's Hand Atomizer and Ozonizer, an inhalation of ozonized vapor should be administered with a mixture thoroughly made of

half Marchand's Peroxide of Hydrogen (medicinal),
half chemically pure glycerine.

The above should be carefully mixed and renewed every three days.

(See description and cuts of Charles Marchand's Hand Atomizer and Ozonizer, pages 16-17.)

The duration of each inhalation should not exceed ten minutes, and should be taken three to six times daily. Inspirations should be as deep and prolonged as possible.*

The above described treatment in cases of Hay Fever is unequalled as a preventive, and it is the only cure for this periodic, repulsive, and very troublesome disease.

In case of obstruction of the nostrils or sneezing after each application of the remedy, see the explanations given on page 10, article headed "Catarrh of the Nose."

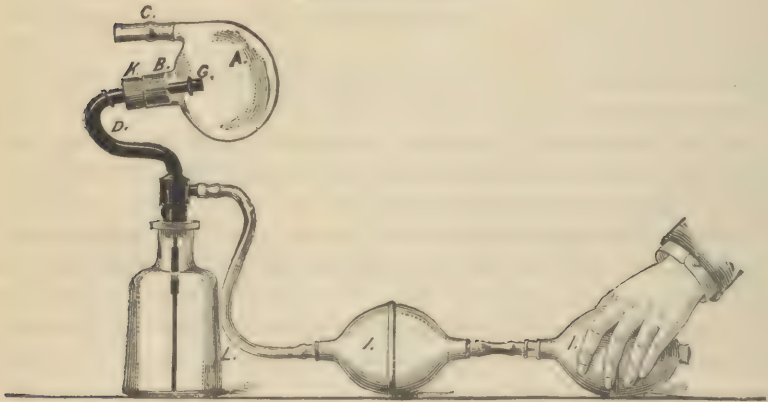
* In very severe cases an application of Glycozone to each nostril, morning and evening, will accelerate the cure. (See page 10, article headed "Catarrh of the Nose.")

The ozonized vapor inhalations constitute a very important part of the treatment for this disease, as it relieves immediately Asthma, which always accompanies Hay Fever.

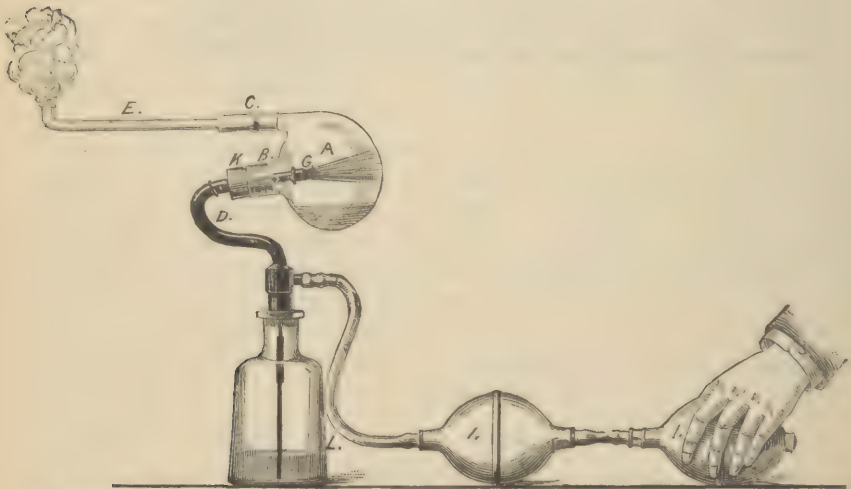
CHARLES MARCHAND'S

COMBINED

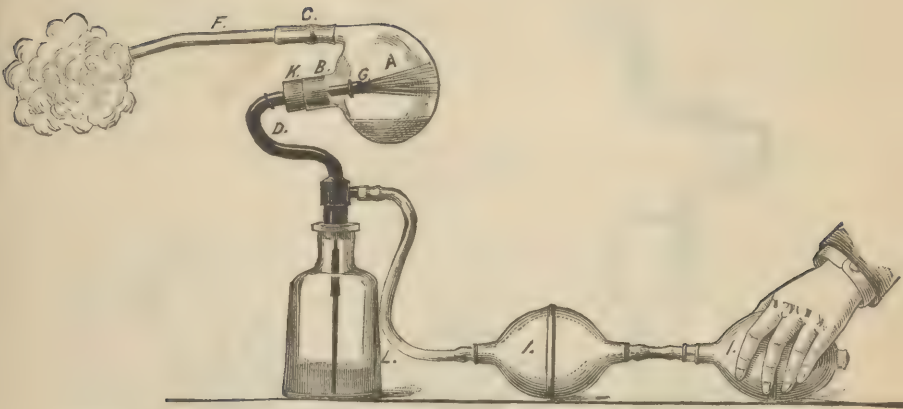
HAND ATOMIZER AND OZONIZER.

DESCRIPTION :

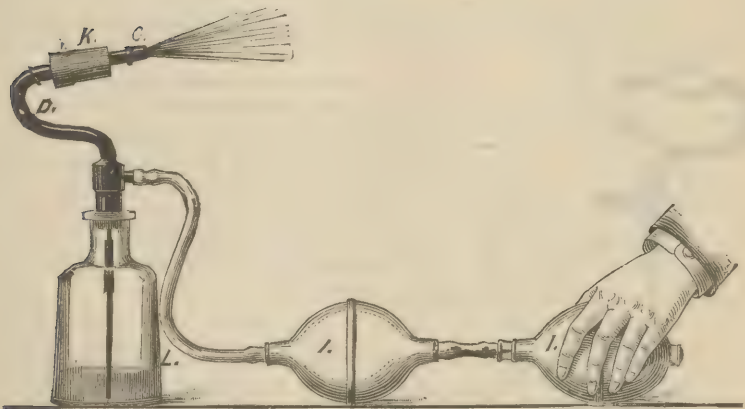
CUT NO. 1.—This cut represents apparatus when unpacked from its original box.



CUT NO. 2.—This cut represents apparatus ready for inhaling vapor through the nose in the treatment of Asthma, Bronchitis, and all lung diseases.



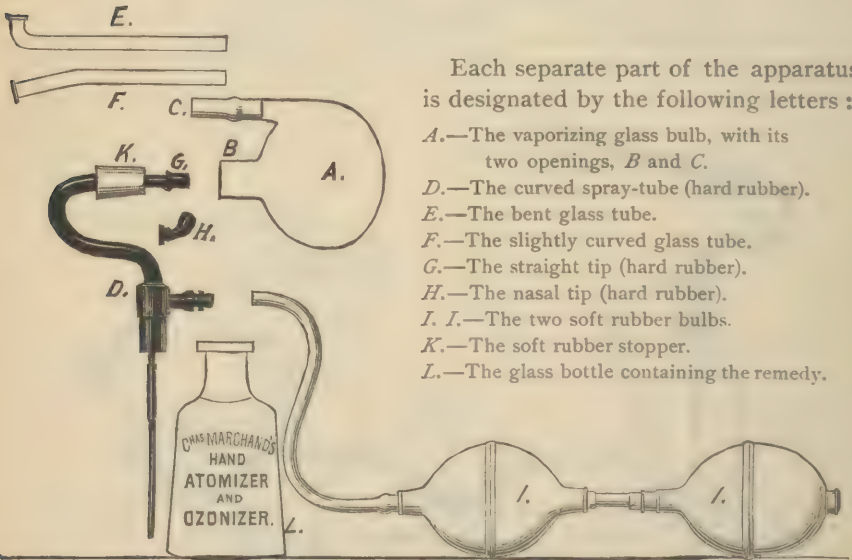
CUT No. 3.—This cut represents apparatus ready for inhaling vapor through the mouth in the treatment of Asthma, Bronchitis, and all lung diseases.



CUT No. 4.—This cut represents apparatus ready for spraying the throat.



Cut No. 5.—This cut represents apparatus ready for spraying the nostrils.



Cut No. 6.—This cut shows the different parts of the Hand Atomizer and Ozonizer when disconnected.

The three-ounce glass bottle *L* is graduated in twelve parts, each part corresponding to one-quarter of one ounce, so that it is very easy to mix the medicine in the required proportions.

The working of this apparatus will be easily understood by referring to the above illustrations.

DIRECTIONS FOR USING THE APPARATUS IN THE DIFFERENT CASES.

First—The proper mixture of Marchand's Peroxide of Hydrogen (medicinal) with chemically pure glycerine for administering ozonized vapor inhalations is thoroughly made in the bottle *L*, as it is shown on cuts No. 2 and No. 3.

Then, by quickly and repeatedly pressing the terminal soft rubber bulb *I*, the air is forced through the bottle *L*, and produces a coarse spray in the vaporizing bulb *A*. The concussion of the spray against the glass breaks up the mixture, and a large amount of fine ozonized vapor escapes in a continuous flow through the bent glass tube *E*, as represented on cut No. 2, or through the straight glass tube *F*, as shown on cut No. 3.

When the condensed liquid in the bulb *A* reaches the lower part of the neck *B*, it should be emptied in the bottle *L*, by disconnecting the spray-tube *D*. Then reconnect the parts, and the apparatus is again ready for use.

Second—When the apparatus is needed to spray either the throat or the nose, Marchand's Peroxide of Hydrogen (medicinal) is mixed with the necessary quantity of water in the graduated bottle *L*, as shown on cuts No. 4 and No. 5. NOTE.—Some practitioners believe that Peroxide of Hydrogen may be inhaled by means of any of the ordinary inhalers, the same being placed in a jacket vessel of water heated to 120°–140° Fahr. This method is absolutely wrong, for the following reason: When Peroxide of Hydrogen is heated to 120°–140° Fahr., steam, oxygen (formula O), and only traces of ozone are inhaled by the patient (see foot note, page 7, article headed "Oxygen Inhalation"). On the contrary, when Peroxide of Hydrogen (medicinal) vapor is mechanically produced by means of the Hand Atomizer and Ozonizer, the vapor which reaches the diseased tissues has the same curative properties as Peroxide of Hydrogen itself.

CAUTION.

The spray-tube should be kept clean by passing tepid water through it at least twice a week. Should it get clogged, disconnect the vaporizing bulb *A* and the bottle *L*, unscrew the tip *G*, and blow both ways through the spray-tube, or pass a thin wire through it, as you would do for any ordinary spray atomizer.

The above-described apparatus is entirely made of glass and hard rubber, because no metal should come in contact with Marchand's Peroxide of Hydrogen (medicinal). Use only silver, hard rubber, glass, or porcelain spoons to measure either Marchand's Peroxide of Hydrogen (medicinal) or Glycozone.

Treatment of Asthma.—By means of Ch. Marchand's Hand Atomizer and Ozonizer, inhalations of ozonized vapor should be administered three to six times daily. Any similar apparatus made of metal should never be used in connection with Marchand's Peroxide of Hydrogen (medicinal).

The action of vaporized Marchand's Peroxide of Hydrogen (medicinal), or ozonized vapor, upon the diseased surface of the bronchial tubes or the cells of the lungs is similar to the action of this bactericide upon any open sore or ulcer which is invaded by microbes. The microbial element is destroyed at the contact of ozone, which is set free, and the diseased tissues are purified and made healthy.

The mixture for inhalations which has given the most satisfactory results is made of

one-half Marchand's Peroxide of Hydrogen (medicinal),
mixed with one-half chemically pure glycerine.

Mix well together by shaking the bottle, and renew this mixture every two days.

The duration of each inhalation should not exceed ten minutes, and after each inhalation, during the winter, the patient should remain in-doors for fifteen or twenty minutes.

In many cases of long standing it will be found very beneficial to the patient to take internally every day two or three tumblerfuls of ozonized water made of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of water.

This will cleanse and purify the stomach and regulate the bowels.

Bronchitis—Treatment.—By means of Charles Marchand's Hand

Atomizer and Ozonizer three inhalations of ozonized vapor should be administered daily.

It is the most efficacious local treatment which can be prescribed to subdue this disease, on account of the harmless, although very powerful, antiseptic and healing properties of Marchand's Peroxide of Hydrogen (medicinal).

It quickly checks profuse bronchial secretion, and by its stimulating action upon the diseased tissues of the bronchial tubes an absolute cure is effected in a very short time.

Mixture for inhalations :

One-half Marchand's Peroxide of Hydrogen (medicinal)
with one-half chemically pure glycerine.

This mixture should be made perfect by shaking the bottle, and renewed every three days.

And as a beverage, drink daily three or four tumblerfuls of ozonized water made of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
mixed with 2 pints of water.

This beverage will have the most beneficial effect upon the stomach, which is always more or less affected by droppings from the throat.

In this malady Marchand's Peroxide of Hydrogen (medicinal) destroys the microbes or germs which are the cause of the disease, the unhealthy secretions of the bronchial tubes disappear, and the diseased tissues are made healthy.

Whooping-cough—Causes.—Dr. Burger, of Bonn, Germany, and Dr. Affanassieff, of Russia, have demonstrated the presence of micro-organisms in Whooping-cough sputum. Dr. Affanassieff has prepared, with all the precautions, for microscopical experimentation, a small portion of the expectoration of a Whooping-cough patient, which showed large numbers of short rod bacteria, part singly, partly in two and of larger chains.

With pure cultures of these rod bacteria the investigator has made several experimental inoculations upon animals. A solution of this culture upon agar-agar, at least eight days old, in one-half a cubic centimetre of common salt, was made and injected into the windpipe or lungs of dogs and rabbits, of course under antiseptic precautions.

The animals all contracted a disease similar to Whooping-cough, often complicated with Broncho-pneumonia.

Several died, and the autopsy showed that the mucous membranes of the bronchi, of the trachea, and even of the nose, are the chief seats of the injected bacteria.

This same bacterium was found in the lungs and respiratory mucous membranes of children who died of Whooping-cough.

Dr. Affanassieff considers it to be the true cause of Whooping-cough, and names it the "*bacillus tussis convulsiva*."

Dr. Schwenker (London *Lancet*, January 7, 1888) and Dr. Wenat (*Medical News*, June 2, 1888) have confirmed Dr. Affanassieff's observations.

One hundred cubic centimetres of the pure culture, containing a considerable quantity of the above-mentioned micro-organisms, have been submitted to the action of three cubic centimetres of Marchand's Peroxide of Hydrogen (medicinal). The complete annihilation of the bacteria has been effected in less than seventy seconds of contact.

Treatment.—Whooping-cough, being caused by a microbial affection, requires antiseptic treatment; and Marchand's Peroxide of Hydrogen (medicinal), applied in the following manner, will effect promptly an absolute cure:

First—Spray frequently and copiously the nose, throat, pharynx, and larynx with a mixture made of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 6 tablespoonfuls of water.

The patient may swallow some of the remedy without discomfort, as it is beneficial and perfectly harmless. Three to four applications every day will be sufficient in most cases.

Second—By means of the Hand Atomizer and Ozonizer, administer ozonized vapor three to six times daily, in order to insure the complete destruction of the microbial element in the respiratory organs.

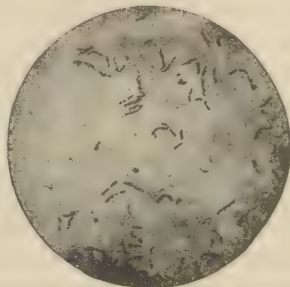
The mixture for inhalations should be made of

half Marchand's Peroxide of Hydrogen (medicinal)
with half chemically pure glycerine.

Mix well together, and renew the mixture every three days.*

* The disorders of the stomach which often accompany this disease will always be surely prevented and cured by the use of Glycozone as an internal treatment. Dose: 1 teaspoonful of Glycozone, diluted in a wineglassful of water, three times daily.

Consumption, Phthisis, Tuberculosis of the Lungs—Causes.—It is a well-demonstrated fact that Consumption or Phthisis is caused by a microbe of a particular species which has been discovered by Dr. Koch, of Berlin, and which is called the *Bacillus Tuberculosis* of Koch.



Bacillus Tuberculosis
in Sputum $\times 1250$ diameters.

With pure cultures of this bacillus, Dr. Koch and other scientific authorities have made experimental inoculations upon animals. A solution of this culture upon agar-agar was made and injected into the windpipe or lungs of dogs. The animals all contracted the Tuberculosis of the Lungs or Consumption. This bacillus is located in tubercles, and it causes the formation of ulcerated cavities of the lungs.

The bacillus tuberculosis is readily destroyed by antiseptic remedies; but although the annihilation of the microbial element is accomplished almost instantaneously by the action of Marchand's Peroxide of Hydrogen (medicinal), this remedy will not cure Consumption when the disease has reached such a degree of development that the lung tissue has broken down. In fact, if it should be possible to bring this remedy into contact with all parts of the lungs which are invaded by the bacillus, undoubtedly the cure of Consumption might be always effected by the ozonized vapor inhalations.*

Treatment.—Frequent and deep ozonized vapor inhalations should be administered three to six times daily, with a mixture of 2 to 3 tablespoonfuls of Marchand's Peroxide of Hydrogen (medicinal) with 1 tablespoonful of chemically pure glycerine well shaken.

Renew this mixture every three days.

* Whenever ozonized vapor is mentioned, it means "vapor produced by the Ozonizer from the mixture of Marchand's Peroxide of Hydrogen (medicinal) with chemically pure glycerine."

The duration of each inhalation should not exceed ten minutes, and inspiration should be as deep and as prolonged as possible. The remedy will reach the lungs if administered either through the nose or mouth, by means of Charles Marchand's Hand Atomizer and Ozonizer. (See page 16.)

Remain in-doors for fifteen to twenty minutes after each inhalation during the cold weather.

It is easy to understand that, the ozonized vapor coming into contact with the bacillus tuberculosis, located in the ulcerated cavities of the lungs, "ozone," which is set free, destroys the microbial element immediately, as explained before on page 7.

When Consumption has not taken developments beyond its first or second stages—that is, when the ulcerated cavities caused by the bacillus tuberculosis are limited and can be easily reached by the ozonized vapor—the above treatment prevents absolutely the spreading of the infection and a cure is effected. But in all cases of Consumption, no matter at what stage of the disease, the relief of the patient will be surely and quickly obtained by the Marchand Peroxide of Hydrogen treatment.

Ozonized vapor has no corrosive, toxic, or injurious action upon the healthy tissues of the lungs; on the contrary, it has very powerful stimulating properties. In addition to the inhalations, the administration of three tumblerfuls daily of ozonized water, made of

1½ ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of water,

after each meal, will be found very helpful to the relief of the patient.

Sore Throat, Angina, Quinsy, Tonsilitis, and all Inflammatory Diseases of the Throat.

Treatment.—Spray or gargle the throat copiously and frequently with a mixture of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 6 tablespoonfuls of water.

You may swallow the remedy without discomfort, as it is rather beneficial. In case of Tonsillar Abscesses gargle more frequently (every two hours, for instance), in order to destroy surely and quickly the pus which is present.

Laryngitis.—Marchand's Peroxide of Hydrogen (medicinal) is certainly the safest remedy to apply in order to subdue this disease.

Spray or gargle three times every day with a mixture made of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 2 to 6 tablespoonfuls of water,

and swallow a portion of the remedy.

In many cases, ozonized vapor inhalations will accelerate the cure.

Pharyngitis.—Spray or irrigate copiously the pharynx three times every day with a mixture of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 7 tablespoonfuls of water ;

swallow a portion of the remedy, and administer ozonized vapor inhalations morning and evening.

Appropriate internal medication may accelerate the cure.

Croup, Membraneous Croup.—This disease seems to be caused by the same specific virus as Diphtheria, but it shows a milder grade of infection.

When fully developed, whitish spots or membraneous exudations are observed in the larynx. After the membrane is once formed, if left alone it may be cast off in the form of a cylinder, in bands or shreds. Some recent experiments have proved that Marchand's Peroxide of Hydrogen (medicinal) destroys these membranes after a short contact, and by its curative properties the diseased surface is rendered healthy.

In case of Membraneous Croup, the nose, throat, mouth, pharynx, and larynx should be flooded every two hours with a mixture of

1 tablespoonful of Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 6 tablespoonfuls of water.

The membranes are destroyed, and by using this remedy frequently and very freely you prevent their reproduction.

In this way the physician will observe that the inflamed parts are thoroughly and quickly cured, and there is no danger of the patient being exposed to the suffocation resulting from the development of these infected membranes.*

* As an internal treatment, 1 tablespoonful of Glycozone diluted in a wineglassful of water and taken three times a day will prevent any disturbance of the stomach and regulate the bowels.

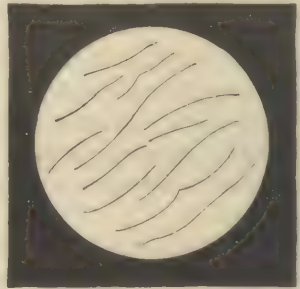
Diphtheria—Causes.—Diphtheria is at first a local disease (see page 2), which is secondarily propagated to the general organism by a contagious virus located about the tonsils ; this virus is an albuminoid substance invaded by a large number of bacteria called micrococci.

Marchand's Peroxide of Hydrogen (medicinal) destroys this virus instantaneously, and it has no injurious effects upon the surrounding healthy tissues.

These cuts illustrate a well-developed case of Diphtheria before and after its cure by use of Marchand's Peroxide of Hydrogen (medicinal). Time taken to destroy the micrococci was less than 70 seconds.



Magnified Diphtheritic Membrane. 800 Diameters. Figure 1 shows the bacteria called micrococci. Fig. 2 shows the fibrin.



Showing the same membrane after short contact with Peroxide of Hydrogen. The bacteria are destroyed ; the fibrin remains normal.

Directions for Use.—Spray or gargle copiously, every two hours, the nose, throat, mouth, pharynx, and larynx with a mixture of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 6 tablespoonfuls of water.

It is beneficial to swallow the remedy, or a portion of it, in gargling.

The virus or germs are readily destroyed from the contact with Peroxide of Hydrogen (medicinal), and the contagion is therefore prevented.

When Diphtheria is well developed it is necessary to spray the child's nostrils, throat, mouth, pharynx, and larynx more frequently with a mixture made of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 3 tablespoonfuls of water.

It is only when the disease is spreading very rapidly that a more concentrated solution should be used, as follows :

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 1 to 3 tablespoonfuls of water.

A child's nostrils, pharynx, and mouth may be flooded every three hours, or oftener, from a proper spray apparatus entirely made of hard rubber and glass, with diluted Marchand's Peroxide of Hydrogen (medicinal), without force and with very little discomfort ; and any solution which finds its way into the larynx or stomach is beneficial rather than harmful.

Adults and children old enough to gargle the pharynx and rinse the mouth *will get a better effect in this way.**

Dyspepsia—Predisposing Causes.—Deficient gastric secretion, with resulting fermentation of food, is perhaps the most prevalent cause of Dyspepsia.

The two main constituents of gastric juice, namely, acid and pepsin, may be deficient in quantity or disturbed in their relative proportions. A certain amount of acid is absolutely essential to the digestive process, while a small amount of pepsin may be sufficient to digest a large amount of albuminoid food.

Bidder and Schmidt have made repeated analyses of pure gastric juice, and their results are confirmed by the analyses of five specimens of gastric juice, free from saliva, and taken by Charles Marchand from dogs.

The gastric juice of a dog is composed of :

Water.....	968.20
Pepton and pepsin.....	17.12
Free muriatic acid.....	2.98
Alkaline chlorides.....	4.16
Ammonium chloride.....	0.51
Chlorine.....	5.16
Phosphates { Lime.....	1.54
{ Magnesia.....	0.28
{ Iron.....	0.05

The most careful analysis proved beyond doubt that fresh gastric juice contains only one mineral acid—that is, muriatic acid.

* As an internal treatment, 1 teaspoonful of Glycozone diluted in a wineglassful of water, administered every three to four hours will prevent the microbial infection developing in the stomach of the patient, and that is a very important result to obtain in order to avoid the infection of the system.

Exciting Causes.—The profession well know that excess in eating and drinking, imperfect mastication and insalivation, the use of indigestible and unwholesome food and of alcohol, the imperfect arrangement of meals, over-drugging, etc., are chiefly the exciting causes of Dyspepsia, and indigestion is the immediate consequence. Constipation of the bowels is an almost universal accompaniment of deranged digestion, and when persistent for years it is apt to lead to the most disastrous consequences.

The most prominent of the local symptoms of Dyspepsia are : A sense of fulness and distention after eating, discomfort during digestion, lack of appetite and eructations, or heart-burn, flatulence, regurgitations of food, and sometimes, in acute cases, nausea and vomiting.

Now that I have resumed the causes of Dyspepsia, which produce a general inflammation of the coats of the stomach, the profession know that the innumerable remedies which have been recommended to subdue this disease may be classified as follows :

First—Remedies having a stimulating action upon the secretion and muscular coats of the stomach.

Second—Introduction in the stomach of a necessary amount of one or several of the constituent elements of the gastric juice, in order to make it normal.

Third—Remedies having the property to lessen the abnormal irritability.

Fourth—Remedies having the property to facilitate digestion.

It is evident that any remedy which will restore the coats of the stomach to their normal condition will contribute to effect an absolute cure, providing the patient will observe a proper regimen.

Glycozone, by its wonderful antiseptic and healing properties, not only prevents the fermentation of the food in the stomach, but it cures also the inflammation or irritation of the mucous membrane in a very short time. Consequently, the most powerful and efficacious treatment to be applied, in order to remove the causes of Dyspepsia, can be formulated as follows :

Before or after each meal administer 1 teaspoonful of Glycozone in a wineglass nearly filled with water, stirred and taken three or four times daily.

Use no other remedy.

The digestion is accomplished, from the beginning of its application.

without the least discomfort. The relief is almost immediate, and a cure absolute, if earnestly used.

After a few days the secretion of gastric juice is made normal, and the most acute cases of Dyspepsia, those of long standing, are permanently cured within two to six months of this treatment, when all other remedies have failed.

Catarrh of the Stomach, or Gastritis, Chronic or Recent.—The mucous membrane of the stomach is usually the seat of this disease.

Among the direct exciting causes of gastric inflammation, corrosive poisons and the excessive use of alcohol are recognized to be more prevalent than any others.

Chronic Catarrh of the Nose is often the cause of Gastritis on account of the large quantity of infected secretions which, after developing in the nasal cavities, find their way into the stomach.

The immediate consequence of that dropping is to produce an inflammation of the coats of the stomach, and little by little the microbial infection produces a general morbid condition having the symptoms of Catarrh of the Stomach.

In cases of acute Catarrh of the Stomach the autopsy shows that the mucous membrane is covered with a thick, tenacious, stringy mucus ; the secretion of gastric juice is very imperfect, and the digestion of food cannot be accomplished.

Glycozone, by destroying the morbid element which is the cause of this disease, rapidly subdues the inflammatory condition of the coats of the stomach, and then the mucous membrane, being restored to its normal state, the secretion of the gastric juice will become regular, and the digestion will not be disturbed any more.

Treatment.—Administer, three or four times daily, before or after each meal,

1 to 2 teaspoonfuls of Glycozone,

diluted in a wineglassful of water, well stirred.

This treatment will never fail to accomplish an absolute cure within two to six months, providing the physician will impress upon the mind of his patient that he should take his meals regularly and with sobriety.

Ulcer of the Stomach.—This disease is due to various causes, of which the immediate effect is to interfere with the digestion.

Vomiting of food is an indication of Gastric Ulcer, and in severe cases it is followed by hemorrhage.

The gastric juice is secreted with deficiency, and in order to remove the cause of this disorder a powerful antiseptic treatment is required.

The most satisfactory results are obtained :

First—If the patient use as a beverage a small quantity of ozonized water at each drink, this ozonized water being made of

1 ounce of Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of water.

The microbial element is readily destroyed by the small quantity of ozone which is set free at the immediate contact of the ulcerated surface.

Second—The healing part of the treatment consists in the administration of

1 to 2 teaspoonfuls of Glycozone

diluted in a wineglassful of water, three or four times daily, before or after eating.

This treatment is absolutely harmless, and the relief of the patient is obtained almost immediately.

An absolute cure is effected within two to six months.

Scarlet Fever—Causes.—It is a proven fact that this disease is caused by bacteria of the micrococcus species, as shown by the cut below, which illustrates a magnified portion of excretions of an ulcer of the larynx (800 diameters) taken from a Scarlet-fever patient.

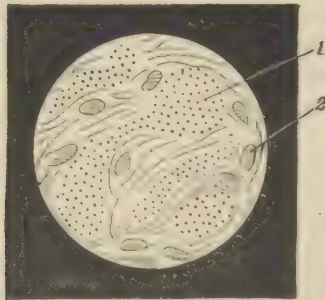


Fig. 1 shows the bacteria of the scarlet fever.

Fig. 2 shows the fibres of the tissue and globules.

Every physician knows that Scarlet Fever is a contagious affection to the highest degree, and that it may be communicated by anything that has touched the patient, such as air, food, clothing, sheets, furniture, curtains, etc. All discharges from bowels, kidneys, nose, mouth, eyes, ears, and skin are dangerous ; and the poison may remain active for months or years by means of clothing packed away in drawers.

Treatment.—The germs which cause this disease are readily destroyed by Marchand's Peroxide of Hydrogen (medicinal) ; and the most powerful local medication is obtained in the following manner :

Spray or gargle the throat copiously and repeatedly every 2 to 3 hours with a mixture made of

1 tablespoonful Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 5 tablespoonfuls of water.*

As a preventive treatment for secondary infection : On the third day of Scarlatina Fever, the whole body of the patient should be washed, morning and evening, with equal parts of

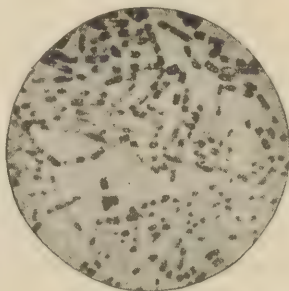
Marchand's Peroxide of Hydrogen (medicinal)
and tepid water.

Use a porcelain dish and a clean soft sponge.

This local treatment does not preclude the internal medication, which may be deemed necessary by the attending physician.

Typhoid Fever—Causes and Treatment.—It is a well-known fact that contaminated water is the cause of this disease.

The following cut illustrates the typhoid bacille, magnified 1250 diameters, from pure culture :



* As a beverage, Glycozone should be administered three times daily. Dose—1 teaspoonful diluted in a wineglassful of water.

Marchand's Peroxide of Hydrogen (medicinal) destroys those microbes instantaneously. Consequently, a beverage made of

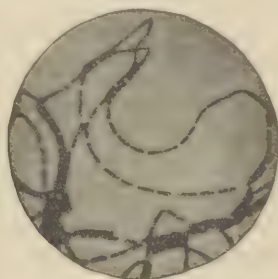
1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 3 pints of water

constitutes the most efficacious and powerful antiseptic treatment, which always prevents both pyæmia and septicæmia.*

This antiseptic medication does not preclude the general treatment which may be prescribed by the attending physician.

Anthrax—Carbuncle.—This affection, which is caused by the *Bacillus Anthracis*, is at first a local disease which requires a very powerful antiseptic treatment, immediately after the carbuncle has been opened by a surgical operation or otherwise.

The following cut illustrates the *Bacillus Anthracis*, magnified 1250 diameters, from pure culture :



Bacillus Anthracis × 1250
diameters.

The *Bacillus Anthracis* is readily destroyed by Marchand's Peroxide of Hydrogen (medicinal).

Treatment.—Wash or irrigate the sore, morning and evening, with Marchand's Peroxide of Hydrogen, full strength, taking great care that the liquid should be thrust into the discharging sinuses, in order to secure the complete destruction of the microbial element ; the pus is also destroyed, and the cleansing of the sore is made perfect.

As a local dressing a double thickness of surgical lint should be

* Glycozone, administered three times daily in the proportion of 1 teaspoonful diluted in a wineglassful of water, will prevent the disorders of the stomach.

soaked into Glycozone and applied to the sore ; and an over-covering of oiled silk should be used.

The above local treatment does not exclude the internal medication.

Yellow Fever.—According to the recent researches made by Dr. Paul Gibier, of the Faculté de Médecine de Paris, France, it seems to be a positive fact that Yellow Fever is caused by bacteria which are located in the intestines. This theory being supported by other prominent bacteriologists, the most logical treatment, in order to subdue this intestinal infection, is to administer some laxatives in connection with antiseptic remedies.

The use of bichloride of mercury solution has been recommended as a rectal injection, although it should be absolutely condemned, owing to its corrosive and toxic properties.

A 3 per cent. solution of bichloride of mercury is equivalent, as a bactericide, to a 2 per cent. solution of Peroxide of Hydrogen (medicinal). Then a 1 per cent. solution of Peroxide of Hydrogen (medicinal), which corresponds to a $4\frac{3}{4}$ volume capacity, has the same bactericide power as a $1\frac{1}{2}$ per cent. solution of bichloride of mercury. (See on page 8, "Comparative Tests.")

Treatment.—By means of a glass or a hard rubber syringe the physician should prescribe a rectal injection, administered three times daily, with one-half pint of a mixture made of

1 ounce of Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 4 ounces of lukewarm water ;

and he will obtain the same disinfectant action as he would obtain by using half a pint of a $1\frac{1}{2}$ per cent. bichloride of mercury solution. The use of such a quantity of bichloride of mercury should evidently kill both the germs of the disease and the patient.

WOMEN'S WEAKNESSES.

Whites, Leucorrhœa, etc.—These very troublesome and painful diseases require not only an appropriate internal medication, but also a powerful local antiseptic treatment.

All the remedies prescribed to subdue these affections are more or less injurious on account of their corrosive, irritating, or poisonous

properties ; and, in fact, they produce very often an aggravation of the disease.

On the contrary, Marchand's Peroxide of Hydrogen (medicinal), which is more powerful than any one of these antiseptics (see page 8, "Comparative Tests"), has, by its stimulating action upon the diseased mucous membrane of the vagina, a prompt and curative effect.

Treatment.—By means of either a glass or a hard rubber syringe, copious injections should be administered at least twice daily, morning and evening, with a mixture of

1 to 3 ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water,

according to the tenderness of the infected surface.

The above treatment will promptly accomplish an absolute cure where all other remedies have failed.

In cases of acute inflammation or ulceration of the womb, injections should be administered copiously and repeatedly morning and evening, with a mixture made of

2 to 4 ounces of Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water.*

Gonorrhœa.—This disease is known to be characterized by a local infection of the urethral canal, which is caused by bacteria of the gonococcus species.

Those germs, as well as the unhealthy excretions which are present, are readily destroyed by Marchand's Peroxide of Hydrogen (medicinal), and the physician may prescribe three injections every day, to be administered by means of a glass or hard rubber syringe, with a mixture of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 4 to 8 ounces of water,

according to the degree of inflammation ; retain this liquid in the canal for a few seconds.† (See p. 47, Report of Dr. E. Churest.)

* Besides the Peroxide of Hydrogen treatment, in chronic cases it is necessary to apply the Glycozone on lint into the vagina morning and evening.

† In case of chronic Gonorrhœa, or Gleet, besides the above treatment the physician should prescribe one injection every night with Glycozone.

The dangers of stricture resulting from the use of caustic or astringent remedies are absolutely avoided, and the cure is effected in half the ordinary time if the above treatment is earnestly followed.

The appropriate internal medication should be prescribed by the physician.

LIST OF DISEASES WHICH ARE SUCCESSFULLY TREATED BY
MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) AND BY
"GLYCOZONE."

The fact that Marchand's Peroxide of Hydrogen (medicinal) is the most powerful pus-destroyer is so well known among physicians who have used it that it is acknowledged to be unsurpassed as a cleansing agent for pus-discharging surfaces, especially in cases otherwise difficult of access, for the instant it touches pus, "ozone" is set free, effervescence takes place, and continues until the pus is destroyed. Physicians may apply this remedy with perfect safety, and they will always obtain the most satisfactory results in the treatment of affections caused by germs or microbes.

For example, Marchand's Peroxide of Hydrogen should be applied to the treatment of the following diseases :

Open Boils, Open Abscesses, Mastoid Abscesses, Ulcers (syphilitic or not), Scrofulous Sores, Cancerous Sores, Bed Sores, Local Gangrene, Broken Ampulla or Blisters, Aphthæ or Ulcerations of the Mouth, Stomatitis, Burns, Herpes Zoster or Zona, Eczema, Skin Diseases, Itch, Piles, and all microbial affections.

Treatment.—As a rule, the above-mentioned diseases should be treated as follows :

First—By means of a glass dropper, or otherwise, apply Marchand's Peroxide of Hydrogen (medicinal) to the sore, and take care not to remove the white foam which is generated when this remedy comes in contact with the diseased surface ; let it stand until it disappears, which occurs in a few minutes.

Then, by means of a glass dropper or a soft camel's-hair brush, apply the Glycozone to the sore and cover it with a double thickness of surgical lint soaked in Marchand's Peroxide of Hydrogen (medicinal).*

* It is advisable to apply both " Marchand's Peroxide of Hydrogen (medicinal) " and " Glycozone," full strength, but it is not always possible. in cases when the sore is exceedingly tender. When such is the case, the Peroxide of Hydrogen (medicinal) should be diluted with water, and the Glycozone should be thoroughly mixed with chemically pure glycerine.

THE USE OF MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL, IN DENTAL SURGERY.)

I beg to call the attention of the dental profession to the fact that, owing to its wonderful bactericide properties, the Peroxide of Hydrogen (medicinal) which I manufacture is the most powerful remedy to apply in order to cure the dental affections which are known to be caused by germs or microbes, such as, for example :

Alveolar Abscesses and Abscesses of the Inferior Maxilla.

Laceration, Inflammation, and Ulceration of the Gums ; Stomatitis.

Necrosis and Caries of the Teeth.

The profession well know that the therapeutical agents used for the treatment of these diseases have been as follows :

Chloride of Sodium.—Salicylic Acid.—Chloride of Zinc.—Nitrate of Silver.—Creosote, and Carbolic Acid.

With the exception of chloride of sodium, which has no appreciable destructive action upon the microbial element, the other above-mentioned remedies are poisonous, and, owing to their corrosive properties, the dentists cannot always limit their action to the affected parts.

The creosote and carbolic acid have such an offensive odor that they should not be used at all. (See foot-note, page 9, article headed, "The Dangers of Carbolic Acid.")

On the contrary, Charles Marchand's Peroxide of Hydrogen (medicinal) is absolutely harmless ; it is almost odorless and tasteless.*

By the healing power of this wonderful remedy, the diseased surface is made healthy and the surrounding tissues remain in their normal condition.

GENERAL DIRECTIONS.

Alveolar Abscesses and Abscesses of the Inferior Maxilla
—**Treatment.**—When an Alveolar Abscess is caused by any constitutional derangement, internal medication would necessarily have to be prescribed.

The local treatment demanded is such as will destroy the accumulated pus.

* It is used without danger or risk of poisoning the patient, and yet it is the strongest bactericide and purifier known. (See "Comparative Tests," on page 8.)

At first, the abscess should be broken by a surgical operation or otherwise, then the cleansing and destruction of pus will be accomplished instantaneously, as follows :

By means of a silver, gold, or platinum syringe, administer into the cavity, morning and evening, one or two injections with a mixture of

1 part Ch. Marchand's Peroxide of Hydrogen (medicinal)
with 3 to 4 parts of water.

In the treatment of Abscesses of the Inferior Maxilla, where there is no free egress for the pus and débris, much more energetic treatment is necessary, and the dentist need not hesitate to administer injections, morning and evening, with a mixture of

1 part Ch. Marchand's Peroxide of Hydrogen (medicinal)
with 2 parts of water.

Besides the above local treatment, the mouth should be kept clean by frequent washings with a mixture of

1 tablespoonful of Charles Marchand's Peroxide of Hydrogen (medicinal), diluted in half a tumblerful of tepid water.*

By following this treatment, the diseased tissues become healthy after one or two applications, and an absolute cure is effected in half the ordinary time.

Laceration, Inflammation, and Ulceration of the Gums—Stomatitis—Treatment.—Charles Marchand's Peroxide of Hydrogen (medicinal) is the most powerful remedy which may be applied in order to subdue these very tenacious and painful affections.

It should be used freely and repeatedly as a tooth-wash, morning and evening, in the following proportion :

1 ounce Medicinal Peroxide of Hydrogen,
diluted with half a pint of water.

Rinse the mouth well, and retain this liquid in the mouth for one minute or so at each washing. No injurious action whatever upon the enamel of the teeth need be feared.

* In chronic cases, during four or five days, floss silk or absorbent cotton, moistened with Glycozone, should be applied immediately after each cleansing of the cavity.

The gums are strengthened by this treatment, healthy granulations develop very rapidly, and an absolute cure is quickly effected.

When the above diseases of the gums are caused by constitutional derangement, internal medication would necessarily be prescribed.

Necrosis and Caries of the Teeth.—Caries is a very common cause of Necrosis. Excessive medication, especially with mercury, will sometimes produce partial, and, occasionally, total Necrosis.

The profession know that the most common agents that injure the teeth are originated in the mouth by the decomposition of animal and vegetable matter.

Inflammation of the mucous membrane of the mouth is a common result of diseased teeth.

The Caries may be constitutional or local, and, if constitutional, the dentist knows that it may be modified by therapeutic treatment of the general system.

In all cases of Caries, the aggravation of the disease will always be prevented by using frequently and copiously, as a tooth-wash, a mixture of

1 to 2 ounces of Ch. Marchand's Peroxide of Hydrogen (medicinal), with half a pint of water.

Rinse the mouth well, at least morning and evening, and retain this liquid in the mouth for one minute or so at each washing.

When the Caries is local, an absolute cure is promptly accomplished by the above treatment.

MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL), USED AS A WASH IN THE TREATMENT OF THE INFLAMMATORY DISEASES OF THE EYES.

*GLYCOZONE IS THE MOST POWERFUL HEALING AGENT FOR
THESE CONTAGIOUS DISEASES.*

Catarrhal Conjunctivitis, or Ophthalmia—Causes.—The profession well know that all the forms of Conjunctivitis which are accompanied by secretion are caused by germs which develop under more or less favorable circumstances, producing a local infection which is contagious to the highest degree.

The virulence of the contagion increases with the impurity of the atmosphere, and this disease is communicated by conveyance of secretion from one to another, by towels, handkerchiefs, etc., with a prodigious rapidity.

Besides a proper ventilation, it is necessary to isolate sick people, and also to keep them perfectly clean, in order to prevent the contagion ; for instance, when any form of Conjunctivitis appears in a public institution it is urgent to put all the affected persons apart from the healthy.

Numerous analyses which I have made in order to ascertain the nature of the remedies ordinarily applied in the treatment to this disease show that they are as follows :

Nitrate of Silver.—**Sulphate of Zinc.**—**Sulphate of Copper.**—**Bichloride of Mercury.**—**Red Oxide of Mercury.**—**Carbolic Acid.**—**Alum.**—**Sugar of Lead.**—**Tannin.**—**Borax.**—**Boracic Acid.**—**Sulphate of Atropine.**—**Cocaine.**

Although some of these remedies have a destructive action upon the microbial element which is the cause of this disease, such remedies should be condemned, owing to their corrosive and irritating properties, In some instances they have the most injurious effect upon the cornea, and very often destroy not only the germs of the disease, but also weaken or destroy the optic nerves, and for this reason their use proves more dangerous than the disease itself.

Tannin, borax, and boracic acid are not dangerous remedies ; but their bactericide power is so feeble that a cure could not be effected by their action, since they cannot remove the cause of the infection.

On the contrary, Marchand's Peroxide of Hydrogen (medicinal) removes the cause of the disease, and Glycozone, by its strengthening and curative action, makes the mucous membranes of the eye grow stronger daily.

Treatment.—First the eyelids should be cleansed by a thorough washing made with a mixture of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 2 pints of lukewarm water ;

then, by means of a glass dropper, apply to the inner portion of the eye, next to the nose, one, two, or more drops of Glycozone every night before retiring and first thing in the morning.

If no dropper is at hand, apply the remedy with a soft camel's-hair

brush, dipped in the Glycozone, to the outer edge of the eye, with an outward motion of the brush, or it may be applied with the finger. In whatever manner the Glycozone is applied, it penetrates the inner surface of the eye by simply opening and shutting the eye repeatedly for a few times.

At first it causes smarting, and often very severe pain for a few seconds, but it is only momentary and soon passes away.

Purulent Conjunctivitis — Ophthalmia Neonatorum, or Ophthalmia in Children.—The oculists well know that the Ophthalmia Neonatorum, or Ophthalmia in Children, is much more dangerous in its consequences than the Catarrhal Conjunctivitis.

This disease, which is the most frequent source of blindness in children, can always be cured if treated as follows:

First cleanse the eyelids by a thorough washing with a mixture of

1 ounce Marchand's Peroxide of Hydrogen (medicinal)
with 1 pint of lukewarm water.

This should be done three times, or at least morning and evening, every day.

Each cleansing should be immediately followed by the application of Glycozone. (See explanations given on page 39, article headed "Catarrhal Conjunctivitis.")

Granulated Eyelids.—Same treatment as Catarrhal Conjunctivitis.

In all diseased conditions of the eyes the patients should expose themselves to air-draughts or bright light as little as possible, and the bowels should be kept open by a suitable internal medication.

SUPPURATIVE AND INFLAMMATORY DISEASES OF THE EAR—TREATMENT BY MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) AND "GLYCOZONE."

Owing to its wonderful bactericide properties Marchand's Peroxide of Hydrogen (medicinal) is of great value in cases of obstinate chronic suppuration of the middle ear, especially in such cases where it is difficult to reach all the suppurating tract by any local agent.

The fact that it can be forced through the osseous sinuses without danger highly commends its value in the different diseases just mentioned.

In case of profuse suppuration, the cleansing and destruction of pus should be made perfect by applying the remedy in the following manner :

By means of either a glass or a hard rubber syringe inject into the cavity, morning and evening, half an ounce of Marchand's Peroxide of Hydrogen (medicinal), full strength ; let the remedy act during two or three minutes, and then apply into the ear, as a dressing, a small quantity of absorbent cotton well impregnated with Glycozone.

Two washings with Peroxide of Hydrogen and two dressings with Glycozone, applied every day, will cure the most obstinate chronic case in a very short time.

When the disease is not chronic, the suppuration being relatively limited, instead of applying Marchand's Peroxide of Hydrogen (medicinal), full strength, it should be diluted with lukewarm water, in the proportion of half-and-half.

The local dressing should be always made with pure Glycozone, as heretofore explained.

INFLAMMATORY DISEASES OF THE BLADDER. PURULENT CYSTITIS. TREATMENT BY MARCHAND'S PEROXIDE OF HYDROGEN (MEDICINAL) AND GLYCOZONE.

Cystitis may be acute or chronic ; it is always caused by germs.

In all cases of Cystitis the internal medication should be earnestly observed, and the patient should not drink irritating beverages.

The profession well know that the remedies ordinarily applied in the local treatment of this disease have rather palliative than curative properties.

In Peroxide of Hydrogen (Medicinal) we have a remedy which readily destroys the pus, and also the microbial element which is the cause of the disease.

Peroxide of Hydrogen (Medicinal) will always prevent the development of any affections which very often accompany Cystitis, such as Phlebitis, Nephritis and Gangrene of the bladder.

The experiments made by Dr. Paul Gibier have demonstrated that :

- 1st. Peroxide of Hydrogen (Medicinal) has no injurious effect upon animal cells ;
- 2d. It has a very energetic destructive action upon vegetable cells—microbes ;

3d. It has no toxic properties ; five cubic centimetres injected beneath the skin of a guinea-pig do not produce any serious result, and it is also harmless when administered internally.

(See report by Dr. P. Gibier, page 51.)

Treatment.—By means of a hard rubber catheter, irrigations of the bladder should be made at least twice daily, morning and evening, with six to eight fluid ounces of a mixture made of

two ounces of Marchand's Peroxide of Hydrogen (Medicinal)
with one pint of tepid water.

In cases of urethritis and also in cases of acute inflammation or ulceration of the bladder, when the pain is very great, Dr. Robert T. Morris, of New York, recommends that the application of Peroxide of Hydrogen should be preceded by Cocaine or Ether, for the purpose of quieting the smarting. (See article headed, "The Necessary Peroxide of Hydrogen, by R. T. Morris, M.D., of New York," p. 50.)

In addition to the above local treatment with Peroxide of Hydrogen, the introduction into the bladder of a small quantity of Glycozone will always accelerate a cure.

Every evening before retiring, inject into the bladder one fluid ounce of the following mixture :

half Glycozone,
half C. P. Glycerine.

The above remedies are the most powerful topical agents which can be used in order to subdue the inflammatory diseases of the bladder.

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OPINION OF THE MEDICAL PROFESSION.

SEE a report on Hydrogen Peroxide, read at the Indiana Institute of Homœopathy, May 19, 1885, published in the *Medical Era*, July, 1885, and republished in response to numerous requests, after having been revised, in the number issued April, 1886. By Wm. B. Clarke, M.D., Indianapolis, Ind.

In this very elaborate article Dr. Wm. B. Clarke says: "I have used several makes of Peroxide of Hydrogen, foreign and domestic, and find the purest and best to be Ch. Marchand's Peroxide of Hydrogen (medicinal)."

See also a report on Hydrogen Peroxide read before the New York Society for Medico-Scientific Investigation, by W. W. Blackman, M.D., Brooklyn, N. Y. This report is published in the *North American Journal of Homœopathy*, July, 1886, pp. 554 to 564.

SOME CLINICAL FEATURES OF DIPHTHERIA AND THE TREATMENT BY PEROXIDE OF HYDROGEN.

By GEORGE B. HOPE, M.D., NEW YORK.

Surgeon Metropolitan Throat Hospital; Professor Diseases of Throat, University of Vermont.

(Extract from the *New York Medical Record*, October 13, 1888.)

The sentiment, so long divided, with regard to the constitutional or local inception of diphtheria, seems to be now almost universal in the direction of the latter theory. Consequently, in the light of this opinion, it is clear that the rational treatment must rest more on the recognition of some local agent which will surely destroy the specific germ before a full development of the constitutional infection is reached, rather than on any system of general medication which might be presumed to act more or less as an antidote in combatting the septic influences occurring in the course of the disease. . . .

On account of their poisonous or irritant nature, the active germicides have a utility limited particularly to surface or open-wound applications, and their free use in reaching diphtheritic formations in the mouth or throat, particularly in children, is unfortunately not within the range of systematic treatment. In Peroxide of Hydrogen, however, it is confidently believed will be found, if not a specific, at least the most efficient topical agent in destroying the contagious element and limiting the spread of its formation, and at the same time a remedy which may be employed in the most thorough manner without dread of producing any vicious constitutional effect. Although the Peroxide is by no means of recent date, its medicinal value has been chiefly confined to the cleansing of foul ulcers and suppurating wounds, and there is hardly more than a casual mention of its utility in the treatment of diphtheria previous to a paper of Dr. Mount Bleyer on this subject.* Quite independently of these observations, somewhat over eighteen months since, at the Metropolitan Throat Hospital, several cases of well-marked buccal diphtheria were treated with the

* *The Medical Record*, August 13, 1887.

Peroxide, with the effect of confirming in the most satisfactory manner the results obtained by Dr. Bleyer. The report of these cases was consequently omitted, pending the experiences it was supposed others would be quick to furnish on a more extended scale of the new remedy so warmly advocated. Among the somewhat small number of trial cases which have appeared at various times in the medical press, there are none in which a distinctly negative opinion is expressed, and where only a partially satisfactory result is attained there has appeared to be sufficient cause to permit a reasonable explanation for the fact. . . .

A further explanation for the uncertain results attending the use of the Peroxide lies in the direction of the preparation itself, as also in the manner of its topical application. The usual descriptions allow the diluted strength of from three to seven volumes of distilled water. Inasmuch as the efficacy depends upon the ozonized oxygen in solution, it has seemed desirable to rely on the full strength of the official preparation of fifteen volumes, especially when used in the fauces, where any slight irritation from its acidity is not apparent. In all the cases treated, a fresh, standard Marchand's preparation of fifteen volumes was that on which the experience of the writer has been based. An equally important element is in making the application in such a manner as to produce the most determined effect on the diseased tissues with as little local disturbance as possible. Swabbing the tonsils and pharynx is the rough and ready method commonly resorted to, with the second motive of detaching, if possible, the membranous formation. Such treatment is not only unnecessarily harsh toward the patient, but also in intrinsic efficacy falls far short in securing the best therapeutic value of the remedy. It is properly recognized that the removal of the membrane, unless it occurs spontaneously, is not favorable to the local conditions; moreover, the glairy mucus coating the surface does not permit the application to come fairly in contact with the disease, or so superficially as to require the most constant repetition. The latter criticism holds the same bearing, only modified in a degree, to the hand-ball vapor and spray-producing instruments that have been recommended.

A steady, coarse spray, with an air-pressure of twenty pounds or more, will in a few moments' time produce a more positive action than prolonged efforts to reach the fauces by means of cotton applicators. The force of the spray should be sufficient to cleanse at once the surface accumulations, as it destroys the necrosal elements with which it comes in contact. In this manner the removal of the *debris* and the action on the deeper structure go hand in hand.

It will be noticed that immediately on contact with the Peroxide, a white, cloudy coagulum is formed on and about the diphtheritic patches, readily floated off and exposing a more sharply defined and a flatter, smooth and whiter base. Properly speaking, there is no liquefaction of the exudation, but the decomposition of the inflammatory products is so complete that the cells are broken up and freed from the entangling fibrous net-work beneath. In a particular instance, in the case of apparently a continuous diphtheritic slough, involving the tonsils and extending in an unbroken line across the margin of the soft palate, a solitary application exhibited this effect to such a degree that the natural color of the mucous membrane appeared in spots as if the exudation might have bridged across sound tissue without as yet securing attachment to the sub-epithelial layers.

How frequently the treatment is to be followed up depends to a considerable extent on the density as well as the area of the surface involved. It may be said, however, that two applications a day, in the great majority of cases, should be sufficient, if thoroughly performed, to arrest all danger of extension and accomplish the gradual resolution of the local formation.

If the experience of the writer is confirmed, it is apparent how much time, trouble and unnecessary handling is obviated when contrasted with the methods outlining hourly or half-hourly swabbing, or, as one has more frankly expressed it, "scrubbing," with nauseating applications, and culminating in the exhaustion of the patient, if not the most indifferent success. No reasonable objection can be raised

either on the score of the expense or the difficulty of transporting the apparatus necessary, as small portable air-receivers can be readily obtained in the instrument shops, on the model of those devised by Codman & Shurtleff, of Boston, and which for the purpose are equally efficient as the larger stationary office fixtures.

The more recent experience of Dr. Gifford (the *Medical Record*, September 1, 1888), establishing the active germicidal properties of Peroxide of Hydrogen, rapidly diminishing in proportion to its dilution in what might be called a geometrical ratio, appears to emphasize in a marked degree the clinical observations on which the main features relating to its employment have been based.

SOME PRACTICAL HINTS IN CONNECTION WITH INTU- BATION OF THE LARYNX, AND A RÉSUMÉ OF 206 CASES OF DIPHTHERIA OPERATED ON FROM 1886 TO 1888.

By J. MOUNT BLEYER, M.D.

New York Medical Journal, February 2, 1888.

(*Extract.*)

. *Irrigation.*—This is an admirable method of washing away the products of the local lesion. I use a No. 8 soft-rubber catheter which is attached to a fountain-bag syringe; the catheter is passed into the nostrils, first the right and then the left. The solution which is used is made by taking Peroxide of Hydrogen (Charles Marchand's), fifteen volume solution, chemically pure, one ounce to twelve ounces of water. With this solution irrigate each nostril thoroughly. After this has been done, the next move is to wash out the mouth, pharynx, and larynx. If the child can be managed without forcing the mouth open, there is no need of the insertion of a gag; but if not use it. The patient is to be held well forward over a basin for the reception of the returning fluid. Make a second mixture of the Peroxide of Hydrogen of the strength of four drachms to twelve ounces of water. The catheter is passed well down into the larynx, the surrounding parts, and thoroughly irrigated. The fluids are very seldom swallowed, and if this fluid mixture should be swallowed there is no danger of poisoning, as it is a perfectly harmless antiseptic. The fluid is generally immediately expelled by coughing. The mouth is to be kept wide open and the head well forward. By this mode of treatment patches of membrane, inspissated muco-pus, etc., can be washed away without difficulty and without pain. My experience with Peroxide of Hydrogen for the last four years has made me familiar with its varied use in the treatment of diseases of the nose and throat. From a consideration of the action of Peroxide of Hydrogen upon the deposit of diphtheritic membranes, and the rapid reproduction of bacteria, it will at once be evident that the earlier the application of the remedy is adopted, the better. While the membrane is thin and friable, the action of this agent is thorough, quick, and effective; the deposit melts down before the contact of it like sugar in water, to be reproduced in a short time and again removed until the diseased tissue beneath can be plainly seen free from this characteristic covering. In this way, also, the spread of the membrane is checked and its limits often sharply circumscribed, until after some days, when the germinating power of the membrane is conquered and the poison ceases to produce its kind, no more deposit takes place, and the diseased tissues heal. In view of the rapid reproduction of bacteria already mentioned, it is evident that the applications should be no longer apart than two hours, or even less, according to the rapid reproduction

of the membranes. Gargling may be practiced by those who are able, but irrigation is preferred, as a more thorough application is thereby made. Irrigation is easily learned by the nurse, and there is absolutely no danger connected with its use. . . .

For internal use I give the preference to Glycozone, which is chemically pure glycerine saturated with active ozone. It is to be used locally, as a substitute for bichloride of mercury, carbolic acid, permanganate of potash. This is the most powerful of all organic disinfectants and bactericides. I give to a child over two years of age half a teaspoonful of Glycozone, well diluted with water or milk, every two to four hours, and under that age twenty drops. . . .

ON THE MEDICINAL USES OF HYDROGEN PEROXIDE.

By E. R. SQUIBB, M.D., BROOKLYN.

Read before the Kings County Medical Association, February 5, 1889, during the discussion on diphtheria, and published in Gaillard's *Medical Journal* for March, 1889, p. 267.

(Extract.)

Throughout the discussion upon diphtheria very little has been said of the use of the Peroxide of Hydrogen, or hydrogen dioxide, yet it is perhaps the most powerful of all disinfectants and antiseptics, acting both chemically and mechanically upon all excretions and secretions, so as to thoroughly change their character and reactions instantly. The few physicians who have used it in such diseases as diphtheria, scarlatina, small-pox, and upon all diseased surfaces, whether of skin or mucous membrane, have uniformly spoken well of it so far as this writer knows, and perhaps the reason why it is not more used is that it is so little known and its nature and action so little understood. Until within the last few years, except in a few manufacturing processes, it was chiefly known as a chemical curiosity, rarely seen because difficult to make. . . .

In order to use it intelligently both the pharmacist and the physician must know something of its nature and properties. The name hydrogen dioxide expresses its composition, and its formula, H_2O_2 , represents this name. Hydrogen monoxide, H_2O , or water, can under certain conditions be made to combine with a second molecule of oxygen, the result being a water-like liquid, H_2O_2 .

This second atom of oxygen is very loosely combined, and the compound molecule is always on a strain to break up into water and oxygen, and when it breaks up, either slowly or rapidly, the oxygen separates in that nascent or most active and potent of its conditions next to the condition known as ozone. It is in the change of this breaking up into water and active oxygen that the latter element exerts its power, and the simple contact with organic matters, which are themselves of complex nature and in condition to be changed, is sufficient to break up the dioxide and liberate the active oxygen. For example, some albuminoids are instantly changed by contact with hydrogen dioxide, as is shown by rinsing the mouth with a dilute solution, when the albuminoid matters of the secretions are at once coagulated. Then, as all virus is albuminoid, whether propagative or not, it is destroyed, or by coagulation rendered inert by simple contact with this agent, just as it is by contact with corrosive sublimate. This simple experiment of rinsing the mouth with a dilute solution of hydrogen dioxide and examining the discharged liquid can hardly fail to convince any one of the destructive potency of this active oxygen on some albuminoids, and of its thoroughly cleansing effects upon the mucous surfaces.

Now, if diphtheria be at first a local disease, and be auto-infectious—that is, if it be propagated to the general organism by a contagious virus located about the tonsils, and if this virus, be as it really is, an albuminoid substance, it may and will be

destroyed by this agent upon a sufficient and a sufficiently repeated contact. . . . All kinds of spray and injection apparatus can now be easily obtained with fittings of hard rubber or glass, and such only should be used.

A child's nostrils, pharynx, and mouth may be flooded every two or three hours, or oftener, from a proper spray apparatus with a two-volume solution without force, and with very little discomfort; and any solution which finds its way into the larynx or stomach is beneficial rather than harmful, and thus the effect of corrosive sublimate is obtained without its risks or dangers. Adults and children old enough to gargle the pharynx and rinse the mouth will get a better effect in this way, equally without much discomfort, from a three-volume solution; and this applies not only to diphtheria, but to scarlatina and other conditions of the mouth and throat which require cleansing and disinfecting. As vaginal injections in cases of uterine cancer, etc., the strength must be increased until the disinfectant effect is obtained. A copious flushing out with a one-volume solution will often be sufficient. When wetted cloths are laid over external sores an over-covering of oiled silk should be used.

As, in passing through several hands after leaving those of the maker, a little mismanagement may spoil the solution, some easily applicable tests of quality and strength are needed.

So long as the solution will yield any active oxygen at all, it will give this off with active effervescence when poured onto a crystal or two of potassium permanganate. A solution containing only a quarter of its volume will give an effervescence so strong as to be misleading, and therefore a quantitative test is needed. The following is a modification of a testing process given to the writer, with much other useful information by Mr. Charles Marchand, of No. 10 West 4th Street, New York City, one of the oldest and best makers of Peroxide of Hydrogen, and one who supplies it to all parts of the country. . . .

(The testing process is given in full on page 6.)

If this agent is to be generally used in the treatment of diphtheria, as it well deserves to be on well established principles of action, it is very important that it be freely applied in the earliest possible stages of the disease, or while it is yet local; and therefore the agent should be easily and promptly accessible in places known to physicians, and not over a mile apart throughout a city, and in hands which know the agent well, and know how to keep it from change and to dispense it on physicians' orders.

If all pharmacists should undertake to keep it—or even all the prominent ones—it would soon share the fate of many other important medicines. . . .

PEROXIDE OF HYDROGEN FOR GONORRHOEA.

REPORT OF DR. E. CHAREST.

(*Medical World*, Philadelphia, Pa., June, 1889.)

EDITOR *Medical World*:

I intended for some time to give to the readers of the *Medical World* my favorite treatment for gonorrhœa and gleet, and I will take the opportunity of Dr. H. E. Stroud's offer to do so now.

What I consider the simplest, quickest and least harmful treatment of gonorrhœa is Peroxide of Hydrogen in injection Δ j to the $\frac{3}{4}$ of distilled water, three to five times a day.

Internally ten to fifteen grains of sodæ bicarb., every three hours, to keep the urine alkaline.

Walking to be avoided as far as possible, also beer, coffee, pepper, etc.; keep the bowels regular; use a syringe with tapered end and soft rubber tip for the injections.

The Peroxide of Hydrogen is used a good deal in commerce for bleaching purposes, so that there are different qualities of it on the market.

For medical use it must be neutral to the litmus paper, odorless and colorless.* This kind you may have from C. Marchand, 10 West Fourth Street, New York City. It must be kept at a temperature below 65° F., and no metal must come in contact with it.

In writing to the above-named firm you will receive a pamphlet on this valuable remedy well worthy to be studied.

I consider it the best germicide, as it is the least harmful and the most effective. For the past two weeks I have used it in the form of a spray, in one of the worst cases of eczema, of four years' standing, which had so far resisted the assaults of a dozen doctors backed up by as many drug stores, and is now almost well.

For syphilitic ulcers, soft chancres, diphtheria, ulcerated cervix, in fact, whenever there is pus or gems, this is the true remedy.

In gonorrhœa, when the penis is highly inflamed, use the injection four to five times a day and the inflammation will rapidly be subdued, leaving the urethra in a perfectly healthy condition. The use of a suspensory is a great relief to the patient.

The fl. ext. of black willow is very good for the erections.

It is also the remedy *par excellence* in gleet, and there is nothing like its inhalation to cut short a paroxysm of asthma.

I don't claim the Peroxide of Hydrogen ($H_2 O_2$) to cure gonorrhœa in three or eight days, for I don't believe there is anything that will do so without danger; but it will cure it in three weeks and leave the unfortunate in the best of condition.

R. CHAREST, M.D.

ST. CLOUD, MINN.

MEDICINAL USE OF HYDROGEN PEROXIDE.

(Editorial *New York Medical Record*.)

It is with pleasure that we peruse the new issue of *Squibb's Ephemeris* for July, 1889, confident as we are that whatever it tells us is in accord with the latest scientific advances, and is the result of careful thought and research. Among its articles is one by E. R. Squibb, on "Hydrogen Peroxide" (published also in *Gaillard's Medical Journal*, March, 1889). This substance which is one of the most powerful and at the same time the least harmful of all antiseptics and disinfectants, has never come into general use, probably because it is so unhandy and spoils so readily (Dr. Squibb thinks it is because it is so little known and so little understood). It is made in large quantities by several large firms, but is used chiefly in the preparation of secret remedies. Its properties have been known for a long time. It is a compound of hydrogen and oxygen which is easily decomposed, yielding water and nascent oxygen which quickly oxidizes substance with which it is in contact. The mere application of a solution of Peroxide of Hydrogen to certain albuminoid substances is sufficient to liberate its oxygen, which immediately coagulates the albuminoid substance within its reach. Thus all sorts of virus, whether propagative or not, are destroyed, or by coagulation rendered inert in its presence, just as when strong corrosive sublimate solutions are applied to them. The undiluted liquid peroxide is from its nature very unstable, and on slight disturbance breaks up into water and oxygen with almost explosive rapidity. Therefore it is never made nor used undiluted, but is always dissolved in water. The "Peroxide of Hydrogen" which is furnished to the physician is really a solution of the pure liquid in water to which a little hydrochloric acid has been added, the acid being necessary to prevent rapid decomposition of the peroxide. A solution which will yield its own volume of active (nascent) oxygen is called a one-volume solution. The fifteen-volume solution (yielding fifteen times its volume of nascent oxygen) is that which is generally

* See page 5, article headed "Important Information on Peroxide of Hydrogen."

supplied by the makers. It is put up in pint bottles, containing about fifteen fluid ounces, sold at 89 a dozen. It is colorless and nearly odorless, tastes slightly acid, and leaves a slight fleeting, not unpleasant after-impression. Changes in this solution are indicated by the formation of bubbles of gas, which rise through the liquid or adhere to the sides of the bottle, and also by increased pressure within the bottles. At or below 59° F., the solution does not change for a long time. At 68° F., it does change, sometimes very rapidly, giving off oxygen gas. The solutions, whether strong or dilute, should be kept cool, outside of the window of the sick-room in winter, and on ice or in ice-water in summer. The bottles in which the solutions are contained must not be held in the hand for any considerable time, as its warmth will cause decomposition. It must not be kept in contact with metals, nor applied by means of metal apparatus, as it not only ruins the instruments, but forms poisonous salts from the metal. It does not attack hard rubber or glass. It is not necessary to apply it as strong as when it comes from the maker. The ordinary fifteen-volume solution sold is not injurious, but it is stronger than necessary, and to use it undiluted is wasteful. For the irrigation of a child's nostrils, pharynx, and mouth, a two-volume (made by adding two ounces of the fifteen volume solution to a pint of water solution, may be used every two or three hours, and any part of this solution passing into the stomach will do good rather than harm.

Adults and children who can gargle—especially in scarlatina and diphtheria—may use, as a gargle and mouth-wash, a three-volume solution (three ounces of fifteen-volume solution to a pint of water). For vaginal injections, as in cancer, etc., a thorough washing with the one-volume solution will often suffice, but it may be necessary to increase the strength until the desired effect is produced. When cloths wetted in a solution are laid upon external sores they should be covered with oiled silk. The methods for testing the activity of any solution are given in full, but need not be repeated here. Mr. Charles Marchand, of No. 10 West Fourth Street, New York City, is referred to as one of the best makers and furnishers of hydrogen peroxide. It is very necessary to get a good article, as careless preparation and after-handling may render it inactive. It is desirable that it should be applied very early when used in diphtheria, before the deposits in the throat have caused disease of the adjacent parts or of the general system.

PEROXIDE OF HYDROGEN FOR THE RELIEF OF BITES FROM VENOMOUS INSECTS.

(Page 148, *New York Medical Record*, February 8, 1890.)

Dr. Philippe Ricord, of Newark, N. J., writes:

"Recently, while charging my atomizer with the full strength of fresh standard Marchand's preparation of Peroxide of Hydrogen, at the bedside of a child suffering with diphtheria, my attention was attracted by the patient's mother, who appeared in pain, and stated that while taking up a blanket to wrap about her child she supposed she had been pricked by a needle, and on further examination discovered a hornet between the folds she had touched. Thereupon I immediately directed the Peroxide of Hydrogen spray into the wound, the surrounding tissues, in the few seconds that had elapsed, being swollen to such an extent as to distinctly mark its site. Instantly all pain ceased, and the swelling rapidly disappeared. In this case the wound was still sufficiently open to readily admit the Peroxide of Hydrogen, and the destruction of the virus was apparently in a moment so completely accomplished that no further treatment was afterwards required. May we not, therefore, infer that it is quite possible to annihilate many other poisons, likewise, by the prompt application of so powerful yet safe an agent as the Peroxide of Hydrogen?"

THE NECESSARY PEROXIDE OF HYDROGEN.

Read in the Section of Surgery and Anatomy, at the Forty-first Annual Meeting of the American Medical Association, held at Nashville, Tenn., May, 1890.

By ROBERT T. MORRIS, M.D., OF NEW YORK.

Published by the *Journal of the American Medical Association*, Chicago, August 9th, 1890, page 216.

Stop suppuration! That is the duty that is imposed upon us when we fail to prevent suppuration.

As the ferret hunts the rat, so does Peroxide of Hydrogen follow pus to its narrowest hiding place, and the pyogenic and the other micro-organisms are as dead as the rat that the ferret catches when the Peroxide is through with them. Peroxide of Hydrogen, H_2O_2 , in the strong 15-volume solution, is almost as harmless as water; and yet, according to the testimony of Gifford, it kills anthrax spores in a few minutes.

For preventing suppuration we have bichloride of mercury, hydronaphthol, carbolic acid, and many other antiseptics; but for stopping it abruptly, and for sterilizing a suppurating wound, we have only one antiseptic that is generally efficient, so far as I know, and that is the strong Peroxide of Hydrogen.

Therefore I have qualified it, not as "*good*," not as "*useful*," but as "*necessary*." In abscess of the brain, where we could not thoroughly wash the pus out of tortuous canals without injuring the tissues, the H_2O_2 injected at a superficial point will follow the pus, and throw it out, too, in a foaming mixture. It is best to inject a small quantity, wait until foaming ceases, and repeat injections until the last one fails to bubble. Then we know that the pus cavity is chemically clean, as far as live microbes are concerned.

In appendicitis, we can open the abscess, inject Peroxide of Hydrogen, and so thoroughly sterilize the pus cavity that we need not fear infection of the general peritoneal cavity, if we wish to separate intestinal adhesions and remove the appendix vermiformis. Many a patient, who is now dead, could have been saved if Peroxide of Hydrogen had been used when he had appendicitis.

The single means at our disposal allows us to open the most extensive abscess-psoas without dread of septic infection following.

In some cases of purulent conjunctivitis, we can build a little wall of wax about the eye, destroy all pus with Peroxide of Hydrogen, and cut the suppuration short. Give the patient ether, if the H_2O_2 causes too much smarting. It is only in the eye, in the nose and in the urethra that Peroxide of Hydrogen will need to be preceded by cocaine (or ether) for the purpose of quieting the smarting, for it is elsewhere almost as bland as water.

It is possible to open a large abscess of the breast, wash it out with H_2O_2 , and have recovery ensue under one antiseptic dressing, without the formation of another drop of pus.

Where cellular tissues are breaking down, and in old sinuses, we are obliged to make repeated applications of the H_2O_2 for many days, and in such cases I usually follow it with balsam of Peru, for balsam of Peru, either in fluid form or used with sterilized oakum, is a most prompt encourager of granulation.

If we apply H_2O_2 on a probang to diptheritic membranes at intervals of a few moments, they swell up like whipped cream and come away easily, leaving a clean surface. The fluid can be snuffed up into the nose and will render a fetid *ozena* odorless.

It is unnecessary for me to speak of further indications for its use, because wherever there is pus we should use Peroxide of Hydrogen. We are all familiar with the old law "*Ubi pus, ibi evacua*," and I would change it to read "*Ubi pus, ibi evacua, ibi hydrogenum peroxidum infunde*." That is the rule. The exceptions which prove the rule are easily appreciated when we have them to deal with.

Peroxide of Hydrogen is an unstable compound, and becomes weaker as oxygen is given off, but **Marchand's 15-volume solution will retain active germicidal power for many months if kept tightly corked in a cold place.** The price of this manufacturer's preparation is about 75c per lb., and it can be obtained from any large drug house in this country. When using the H_2O_2 it should not be allowed to come into contact with metals if we wish to preserve its strength, as oxygen is then given off too rapidly.

H_2O_2 must be used with caution about the hair, if the color of the hair is a matter of importance to the patient; for this drug, under an alias, is the golden hair bleach of the *nymph's despare*, and a dark-haired man with a canary-colored moustache is a stirring object.

PEROXIDE OF HYDROGEN AND OZONE.

THEIR ANTISEPTIC PROPERTIES.

Read before the International Medical Congress, held at Berlin, Germany, on the 7th of August, 1890. Published by *Medical News* of Philadelphia, October 25th, 1890. Pp. 416-418.

By DR. PAUL GIBIER, *Director of the Pasteur Institute of New York.*

GENTLEMEN:

Since the discovery of Peroxide of Hydrogen by Thenard, in 1818, the therapeutic applications of this oxygenated compound seem to have been neglected both by the medical and the surgical professions; and it is only in the last twenty years that a few bacteriologists have demonstrated the germicidal potency of this chemical.

Among the most elaborate reports on the use of this compound may be mentioned those of Paul Bert and Regnard, Baldy, Péan and Larrivé.

Dr. Miguel places Peroxide of Hydrogen at the head of a long list of antiseptics, and close to the silver salts.

Dr. Bouchut has demonstrated the antiseptic action of Peroxide of Hydrogen, when applied to diphtheritic exudations.

Prof. Nocart, of Alfort attenuates the virulence of the microbe symptomatic of carbuncle, before he destroys it, by using the same antiseptic.

Dr. E. R. Squibb,¹ of Brooklyn, has also reported the satisfactory results which he obtained with Peroxide of Hydrogen in the treatment of infectious diseases.

Although the above-mentioned scientists have demonstrated by their experiments that Peroxide of Hydrogen is one of the most powerful destroyers of pathogenic microbes, its use in therapeutics has not been as extensive as it deserves to be.

In my opinion the reason for its not being in universal use is the difficulty of procuring it free from hurtful impurities. Another objection is the unstableness of the compound, which gives off nascent oxygen when brought in contact with organic substances.²

¹ *Gaillard's Medical Journal*, March, 1889.

² The Peroxide of Hydrogen that I use is manufactured by Mr. Charles Marchand, of New York. This preparation is remarkable for its uniformity in strength, purity and stability.

Besides the foregoing objections the surgical instruments decompose the peroxide, hence, if an operation is to be performed, the surgeon uses some other antiseptic during the procedure, and is apt to continue the application of the same antiseptic in the subsequent dressings.

Nevertheless, the satisfactory results which I have obtained at the Pasteur Institute of New York with Peroxide of Hydrogen, in the treatment of wounds resulting from deep bites, and those which I have observed at the French clinic of New York, in the treatment of phagedenic chancres, varicose ulcers, parasitic diseases of the skin, and also in the treatment of other affections caused by germs, justify me in adding my statement as to the value of the drug.

But, it is not from a clinical standpoint that I now direct attention to the antiseptic value of Peroxide of Hydrogen. What I now wish is merely to give a full report of the experiments which I have made on the effects of Peroxide of Hydrogen upon cultures of the following species of pathogenic microbes: *Bacillus anthracis*, *bacillus pyocyaneus*, the bacilli of typhoid fever, of Asiatic cholera, and of yellow fever, *streptococcus pyogenes*, *micro-bacillus prodigiosus*, *bacillus megaterium*, and the *bacillus* of osteomyelitis.

The Peroxide of Hydrogen which I used was a 3.2% solution, yielding fifteen times its volume of Oxygen; but this strength was reduced to about 1.5%, corresponding to about eight volumes of Oxygen, by adding the fresh culture containing the microbe upon which I was experimenting. I have also experimented upon old cultures loaded with a large number of the spores of the *bacillus anthracis*. In all cases my experiments were made with a few cubic centimetres of culture in sterilized test tubes, in order to obtain accurate results.

The destructive action of Peroxide of Hydrogen, even diluted in the above proportions, is almost instantaneous. After a contact of a few minutes, I have tried to cultivate the microbes which were submitted to the peroxide, but unsuccessfully, owing to the fact that the germs had been completely destroyed.

My next experiments were made on the hydrophobic virus in the following manner:

I mixed with sterilized water a small quantity of the medulla taken from a rabbit that had died of hydrophobia, and to this mixture added a small quantity of Peroxide of Hydrogen. Abundant effervescence took place, and, as soon as it ceased, having previously trephined a rabbit, I injected a large dose of the mixture under the dura mater. Slight effervescence immediately took place and lasted a few moments, but the animal was not more disturbed than when an injection of the ordinary virus is given. This rabbit is still alive, two months after the inoculation.

A second rabbit was inoculated with the same hydrophobic virus which had not been submitted to the action of the peroxide, and this animal died at the expiration of the eleventh day with the symptoms of hydrophobia.

I am now experimenting in the same manner upon the *bacillus tuberculosis*, and if I am not deceived in my expectation, I will be able to impart to the profession some interesting results.

It is worthy of notice that water charged, under pressure, with fifteen times its volume of pure oxygen has not the antiseptic properties of Peroxide of Hydrogen. This is due to the fact that when the peroxide is decomposed nascent oxygen separates in that most active and potent of its conditions next to the condition, or allotropic form, known as "Ozone." Therefore it is not illogical to conclude that ozone is the active element of Peroxide of Hydrogen.

Although Peroxide of Hydrogen decomposes rapidly in the presence of organic substances, I have observed that its decomposition is checked to some extent by the addition of a sufficient quantity of glycerin; such a mixture, however, cannot be kept

for a long time, owing to the slow but constant formation of secondary products, having irritating properties.

Before concluding I wish to call attention to a new oxygenated compound, or rather ozonized compound, which has been recently discovered and called "Glycozone" by Mr. Marchand.

This Glycozone results from the reaction which takes place when glycerine is exposed to the action of ozone under pressure—one volume of glycerine with fifteen volumes of ozone produces Glycozone.

By submitting the bacillus anthracis, pyocyanous, prodigiosus, and megaterium to the action of Glycozone, they were almost immediately destroyed.

I have observed that the action of Glycozone upon the typhoid fever bacillus, and some other germs, is much slower than the influence of Peroxide of Hydrogen.

In the dressing of wounds, ulcers, etc., the antiseptic influence of Glycozone is rather slow if compared with that of Peroxide of Hydrogen, with which it may, however, be mixed at the time of using.

It has been demonstrated in Pasteur's laboratory that glycerine has no appreciable antiseptic influence upon the virus of hydrophobia; therefore, I mixed the virus of hydrophobia with glycerine, and at the expiration of several weeks all the animals which I inoculated with this mixture died with the symptoms of hydrophobia.

On the contrary, when glycerine has been combined with ozone to form Glycozone, the compound destroys the hydrophobic virus almost instantaneously.

Two months ago, a rabbit was inoculated with the hydrophobic virus, which had been submitted to the action of this new compound, and the animal is still alive.

I believe that the practitioner will meet with very satisfactory results with the use of Peroxide of Hydrogen for the following reasons:

1. This chemical seems to have no injurious effect upon animal cells.
2. It has a very energetic destructive action upon vegetable cells—microbes.
3. It has no toxic properties: five cubic centimetres injected beneath the skin of a guinea-pig do not produce any serious result, and it is also harmless when given by the mouth.

As an immediate conclusion resulting from my experiments, my opinion is, that Peroxide of Hydrogen should be used in the treatment of diseases caused by germs, if the microbial element is directly accessible; and it is particularly useful in the treatment of infectious diseases of the throat and mouth.

HYDROGEN PEROXIDE IN DIPHTHERIA.

Extract from the *New York Medical Journal*, December 6, 1890.)

1189 MADISON AVENUE, November 8, 1890.

TO THE EDITOR OF THE *New York Medical Journal*:

SIR:—I would suggest the following local treatment for diphtheria: The application to the membrane of Marchand's solution of Peroxide of Hydrogen, fifteen volumes, with an equal bulk of water, then scraping the membrane off with a curette and applying the Peroxide of Hydrogen, one-third dilution, every hour for six or seven hours, then every two hours. If there is no reappearance of membrane after two days, spray the throat occasionally with an antiseptic spray. In this way the membrane is

removed at once. The operation is done at a period of the disease when there is no danger of heart failure, so that the struggles of a child need not be minded.

I am aware that the removal of the membrane in former years was regarded as somewhat dangerous, but at that time nothing was known of disinfectants and germicides.

It would seem that a remedy which, applied to the diphtheritic membrane, removed it after some hours, would prevent its formation. In tolerant patients the peroxide may be put on three or four times so as to be sure of complete disinfection before curetting. A small Thomas's uterine curette answers the purpose admirably. A patient treated as described was comparatively well in two days.

DAVID PHILLIPS, M.D.

PEROXIDE OF HYDROGEN.

(Extract from *Medical Summary*, December, 1890. Page 214.)

After trying for the past five years innumerable therapeutic agents for my lupus or epithelioma, I was advised by Dr. Cutter, a celebrated microscopist and scientist of New York, to spray the ulcer with the peroxide and afterwards apply cotton saturated with the same. I used three different local applications, aristol, Howe's salve, and the peroxide; marked the cotton and sent the same to him.

He reported the best results from the peroxide and advised its continuance. Though it did not kill the spores it made them inactive, while no perceptible difference could be seen upon them from the other two. This peroxide bore the initials P. & W., our noted Philadelphia chemists. Seeing Marchand's advertisement in the SUMMARY, I concluded to try his, and sent for some. He kindly included in the order his glycozone to use in conjunction with the peroxide. A marked change was the result. The sore looked better, cleaner, healthier, and upon examination of the cotton, Dr. C. wrote me to continue the use of Marchand's. Here was a decided test and in favor of Ch. Marchand's. The ulcer has steadily progressed for the better. * * * *

A. LIVEZEY, M.D.

YARDLEY, PA.

HYDROGEN DIOXIDE; A RÉSUMÉ.

BY JOHN AULDE, M.D., OF PHILADELPHIA.

Member of the American Medical Association, of the Medical Society of the State of Pennsylvania, of the Philadelphia County Medical Society, etc.

(Published by the *New York Medical Journal*, December 27, 1890.)

Within the past ten years the use of hydrogen dioxide (peroxide of hydrogen) has become quite general among practitioners whose business has led them to give special attention to some particular class of disorders. Many general practitioners, however, have not availed themselves of the benefit afforded by this comparatively recent addition to our therapeutic resources, owing to the expense and the care required in looking after details, together with the uncertainty which attended its employment. These difficulties no longer exist; but, when we consider the advantages to be gained from its

use, the process of evolution has been remarkably slow, notwithstanding the sporadic attempts which have been made to attract the attention of the medical profession. Novel methods of treatment are too frequently shunned without investigation by regular physicians, while, on the contrary, these innovations are readily adapted to the wants of the quack.

In the present instance, although the *furor* for antiseptics continues unabated, the true position of oxygen has been ignored by those who should have given it their first attention. Long-continued and persistent effort has erected an imposing superstructure upon a theoretical foundation, losing sight of the marvelous influences constantly at work in nature. The corner-stone of this ornate edifice originally adopted was carbolic acid; the pilasters which gave strength and beauty to its walls were composed of carbolated gauze, while cornice and roof were made of protective which had been submitted to a carbolizing process. This highly flavored substance has given place to a number of others, some of which are safer, but no more useful; others are more efficient than carbolic acid, but, as usually employed, are far more dangerous. As the foundation for asepsis rests upon absolute cleanliness, so the foundation for antiseptics must rest upon an equally safe basis as regards the patient. The only agent known at the present time which fully meets our requirements is oxygen in some of its forms. While the spores of anthrax bacilli resist our most poisonous products—such as solutions of hydrochloric acid (two per cent.), boric and salicylic acids in concentrated solutions—oxygenated water alone, in sufficient quantity, was shown by Paul Bert and Regnard to possess the power of destroying the bacteria.

The wonderful properties of ozone are but partly understood; like some other powerful agents, it cannot be safely handled, but it gives great promise of usefulness in the future. The statement has been made that ozone is but an allotropic form of oxygen, and that it is identical with hydrogen dioxide (the subject of the present article), and for all practical purposes, from a therapeutic standpoint, they may be considered substantially the same. Having, then, at our command a remedy possessing such remarkable properties as a bactericide, one which is perfectly harmless when brought into contact with healthy tissues, it will be worth while to study the indications for its use in the treatment of disease. In the first place, however, I should say a word with reference to the causes which have contributed to prevent its universal employment by physicians—causes already referred to incidentally. * * *

3. *The uncertainty* following the employment of the peroxide has arisen from various causes, and, as this is a subject of paramount importance, the items will be considered in detail. In the pure state hydrogen peroxide is exceedingly unstable, and, in order to render it less susceptible to the action of heat, which causes it to part with nascent oxygen rapidly, minute quantities of hydrochloric and phosphoric acids are added to the usual fifteen-volume solution; but this, instead of retarding, rather heightens the effect of the remedy when applied to unhealthy structures, especially mucous surfaces. When the container is allowed to remain in a warm room, or when it is not properly stoppered, the activity of the preparation is materially lessened, if not entirely lost. An excess of acid is objectionable, however, as it renders the peroxide irritating instead of soothing.

Commercial peroxide which is used extensively for bleaching purposes and in the arts, is doubtless responsible for unsatisfactory results, but, as compared with the medicinal preparation, it is a very inferior product, sold at a cost of about eight cents a pound. Physicians should know that this product always contains a large proportion of acids (two to five per cent.), hydrofluoric, sulphuric, hydrochloric, oxalic, and nitric acids, and, knowing this to be the case, they should be careful to examine the reactions and see that the medicinal preparation obtained by patients is supplied in original packages. The commercial product is not "just as good" nor will it "do as well" for the patient; and if these suggestions are kept in view, the success of the peroxide is assured.

Another important thing which I have learned is, that the mixture of the peroxide with glycerin does not make "glycozone," but, instead, a mixture which generates

slowly but constantly secondary products, which appear to possess irritating properties almost as toxic as those of formic acid, well known in Central Africa as a deadly arrow poison. I am of the opinion also that when the peroxide is used in the form of an inhalation by heating with water, a considerable proportion of the nascent oxygen is transformed into ordinary oxygen before reaching the affected tissues, and while I can readily understand how this must detract from its efficiency, remarkably prompt results have attended its administration in this manner. The only obstacle in the way of securing immediate and favorable results from the exhibition of this agent is our inability to command at all times a freshly prepared and thoroughly reliable product, free from the impurities incident to its manufacture; but that difficulty, I believe, is no longer an excuse, as it can be supplied by the principal druggists throughout the country. * * *

Therapeutics—From the peroxide of hydrogen we may obtain, in the form of a vapor or spray, the therapeutic effects of nascent oxygen, and as a surgical application or antibacterial substance this product is far superior to the gas itself. Used in the form of a vapor by inhalation, it increases the secondary assimilation by favoring the elimination of excrementitious products through the stimulating effect upon internal respiration. Just as pure mountain air arouses the activity of functions which have been depressed and promotes health, so oxygen evolved in this manner increases tissue change and prevents the suboxidation which attends upon the arrest of cell function. Oxygen is a tissue builder as well as an oxidizer of carbonaceous and excrementitious products. When it is introduced into the alimentary tract, abdominal fermentations are arrested by the destruction of the germs which produce them; unhealthy mucous secretions are destroyed, while the vitality of the cells lining the walls of the intestine is augmented, and their power against the absorption of ptomaines and leucomaines greatly increased. The surgeon will find the peroxide an efficient and most convenient antiseptic, as it can be freely used in cavities, in discharging sinuses, and upon the most delicate tissues, without danger of producing the slightest irritation. In all cases of threatened collapse, in low conditions of the system, and during convalescence from severe illness, the physician should bear in mind the wonderful revitalizing properties of this remedy. Perhaps the reader will gain a more practical idea of the applications by a reference to some of the more prominent indications, and I shall briefly pass in review some of the diseases in which it may be used with beneficial results. * * *

Since it has been determined that in *yellow fever* and *cholera* the poison germ is found only in the intestine, the peroxide promises to afford exceptional relief in these diseases. When it is introduced into the rectum, the heat of the body will cause oxygen gas to be evolved, while the local action of the drug will destroy all unhealthy products which may be present in the lower bowel. The nascent oxygen will be taken up by the absorbent structures and enter the general circulation; but if we accept the doctrine of phagocytosis, it will do even more than this, by reason of its stimulating action upon the modified white corpuscles, which are now regarded as the special enemies of bacteria escaping through the walls of the intestines. And for the same reason it may be used with advantage as a lavement in the treatment of *diarrhea*, dysentery, and in typhoid fever. In the latter disease I have used the pure oxygen gas with very great satisfaction, and have found a solution of the peroxide superior as a mouth wash during the progress of this most tedious disorder.

The peroxide should be used in all forms of *indigestion*, and more especially when the stomach is weak and depressed to such an extent that the usual antiseptics are not well tolerated. Those who use it once for the relief of indigestion, gastritis, gastralgia, and for the arrest of fermentation, or an abnormal flow of mucous, will have no cause to regret the selection. A large number of *cutaneous affections* are dependent upon an unhealthy condition of the alimentary tract, such as urticaria, eczema, etc., and, of course, are benefited by the use of the peroxide.

Pulmonary affections have long claimed the attention of those who dabbled with oxygen inhalations, and it is in this class of cases where faithful attention to details will produce most marked effects, although I can not be convinced that any medicament in itself can arrest the progress of the disease. The continued use of the peroxide internally improves the primary assimilation; the regular and systematic inhalation of the vapor will not only improve the secondary assimilation, but will also destroy any morbid products with which it comes into contact in the pulmonary tissues, and, judging from my own experience with this agent, I have no hesitancy in saying that its value is not yet appreciated by a large number of physicians who, with it, might be the means of prolonging human life. My observations with the vapor and spray in *asthmatic conditions* have been surprising, and I have found them of signal service in meeting emergencies, such as asphyxia from coal gas, sudden collapse from hemorrhage, typhoid and other fevers. The long continued use of the vapor has a marked effect in restoring the resiliency of the air-vesicles in *emphysema* when it occurs along with asthma in young persons. A gentleman now under treatment has suffered from asthma since he was six weeks old, and is now twenty-five, but under this treatment he has gained weight, is able to sleep regularly every night, and has increased sixteen pounds in weight during the past three weeks, while the chest measurement has appreciably decreased. This method of treatment is valuable in *phthisis* at all stages, but it should be used as an adjuvant to other treatment and attention given to diet. In this connection should be mentioned the usefulness of the vapor in the treatment of *bronchitis*, subacute and chronic, and at the same time the value in aborting attacks of acute catarrh.

Inhalations of the vapor will prove useful as an adjuvant in neuralgia, anæmic headaches, general debility, malarial toxæmia, and corpulence, combined with diet adapted to the various disorders mentioned.

In *surgical practice*, when the solution of the proper strength is brought into contact with diseased tissues, a brisk effervescence takes place and continues until all the pus-corpuscles present are destroyed. This solution may be used topically in nearly all cases of catarrh of the upper air passages in the form of a spray, and it may be used as an antiseptic after the removal of pus in *empyema*. The substance possesses the advantage over other antiseptics of being harmless, and can therefore be used freely in *diphtheria* and *croup*. There are so many indications for its employment that it would be difficult to mention all the *topical uses*, although the following may be referred to, viz., boils, carbuncles, indolent ulcers, carcinoma, and venereal diseases as an injection.

The gynecologist will find numerous applications for this agent. It may be used in the form of a douche in leucorrhœa, erythrit, and vaginismus, and a cotton-wool tampon may be saturated with it and placed in a gelatine capsule (veterinary size) and introduced into the vagina in the case of ulceration, vesico-vaginal fistula, and endometritis. The ophthalmologist and aurist will likewise find that it furnishes them the most complete and safe antiseptic that can be had, and gradually its employment will extend to every department of medicine and surgery.

The most flattering commendations of "Marchand's Peroxide of Hydrogen (medicinal)" have been given voluntarily by numerous well-known authors and contributors to medical literature within the past few years, some of whom may be mentioned as additional evidence that the methods here recommended are worthy of further investigation: Dr. W. B. Clarke, of Indianapolis, Ind.; Dr. George B. Hope, Surgeon to the Metropolitan Throat Hospital, New York; Dr. J. Mount Bleyer, of New York; Dr. Robert T. Morris, of New York; Dr. Paul Gibier, Director of the New York Pasteur Institute; Dr. R. Charest, of St. Cloud, Minn.; Dr. E. R. Squibb, of Brooklyn, N. Y.; and others whose names cannot now be recalled. Dr. Morris refers to it as "the necessary peroxide of hydrogen," and I have found Marchand's product to possess in a remarkable degree the properties so essential to success—viz., uniformity in strength, purity, and stability.

PEROXIDE OF HYDROGEN IN GYNECOLOGY AND IN OBSTETRICS.

By EGBERT H. GRANDIN, M.D.,

*Obstetric Surgeon New York Maternity Hospital, Visiting Obstetrician New York
Infant Asylum, etc.*

(Published by *The Times and Register*, of Philadelphia, January 31, 1891.)

Modern methods of antiseptics enable us in the vast proportion of cases to prevent suppuration. The problem remaining is how arrest it when present, or abort it when imminent.

The virtues of peroxide of hydrogen (H_2O_2) in general surgical practice have recently been heralded by Dr. Robert T. Morris, of this city, in the columns of *The Times and Register*.^{*} The object of the writer is to exemplify his personal experience with this agent, through the brief record of a few cases in which he has tested it.

CASE I. *Sub-mammary abscess.*—About one year ago I was consulted by a Mrs. G. She was nursing a two-and-a-half months' puny infant, notwithstanding the fact that the right mamma was fairly riddled with sinuses, and the left presented to my touch faint fluctuation. Her previous medical attendant had exhausted all routine measures, and yet, as she expressed it, "she was going from bad to worse." She had hectic fever and other symptoms of sepsis; her appearance suggested the absolute necessity of rapid action.

I at once weaned the child, of course; made a deep incision in the left mamma, giving exit to a mass of fetid pus, washed out the cavity with bichloride (1-1,000), and packed it with gauze. I thoroughly wetted the sinuses in the right mamma, irrigated and packed them similarly. In a few days I had control of the sepsis, but the pyogenic membrane and its product resisted all my efforts. In despair, and without much hope of success, I washed out the cavities with peroxide of hydrogen (half diluted with glycerine), and applied a compression gauze bandage. At the end of ten days the abscesses were cured.

CASE II. *Suppurating pelvic hematocle.*—This case was seen in consultation. The patient was a young prostitute, and the only etiological cause I could determine was copulation during menstruation. The tumor bulged in the retro-uterine pouch, and I treated it as follows: Under antiseptic irrigation I aspirated along the finger as a guide, and obtained a mixture of blood and pus. Using the aspirator muzzle as a director, I enlarged the opening transversely, sufficiently to admit a Palmer dilator. Inserting this I divulsed, curetted the cavity—which measured fully three inches square—and washed it out with equal parts compound tincture of iodine and water. I next inserted a flange-rubber drain tube. The cavity was washed out daily through this tube with two and one-half per cent. carbolic, but contrary to my experience with similar cases, it had not contracted much at the end of a week, and was still secreting pus. I then inserted a small Chamberlain glass uterine tube, and distended the cavity with undiluted peroxide of hydrogen. This checked suppuration at once, and when the patient was seen three weeks thereafter, an induration in the posterior vaginal cul-de-sac was the only remnant of the hematocle.

CASE III. *Puerperal septic endometritis.*—Seen in consultation. Fifth day post-partum. Patient had fetid lochia, tenderness over uterus, rise of temperature, rapid pulse. A number of intra-uterine bichloride douches had been administered before I saw the case. Having differentiated extra uterine source of the general sepsis, I curetted the cavity of the uterus, according to the method I have repeatedly described and advocated, removing a mass of degenerated decidua matter, and then,

^{*} See p. 50, reprint of article headed "The Necessary Peroxide of Hydrogen," by Dr. Robert T. Morris.

instead of applying pure phenic acid to the cavity, and irrigating it with iodine and water. I washed it out through a Chamberlain glass tube with a pint of peroxide of hydrogen (undiluted). The local sepsis was thus at once checked; the patient made a rapid convalescence under the means which suggest themselves for meeting the sepsis already in the system.

These cases typify instances in which the peroxide of hydrogen will be found useful by the gynecologist and obstetrician. As opportunity offers I propose to resort to this agent in vaginitis, urethritis, and purulent cystitis. Further, and in this direction I am as yet only experimenting, I am hopeful that in this agent we will find we possess a means which will enable us to avoid laparotomy in certain instances of pyosalpinx. My conclusions on this point, however, it would be premature to state.

My experience thus far with the peroxide of hydrogen justifies the statement that it is absolutely harmless, and that it is at the same time the most efficient of all the agents at present at our disposal for preventing the ravages which uncontrolled suppuration is capable of causing.

SINUS TREATED WITH PEROXIDE OF HYDROGEN.

(Extract from *Practice*, Danbury, Conn., February, 1891.)

Dr. William F. Waugh tells in the *Times-Register* of an old woman who stepped on a nail, which penetrated the foot almost to the superior surface. A sinus formed, and had been discharging for two months when the patient was first seen. Marchand's peroxide of hydrogen was injected into the sinus by means of a hypodermic syringe. The first effect was to destroy the leather of the piston. The sinus was found to be of a horse-shoe shape, the probe passing almost through the foot, between the metatarsal bones, and when the peroxide was injected a hard lump could be felt one inch from the opening on the sole of the foot. This was laid open, and a stream of peroxide was sent through. Result: Cured in a week.

DIPHTHERIA AND THE USE OF HYDROGEN DIOXIDE IN ITS TREATMENT.

Read before the Chemical Society of Maryland, February 6, 1891.

BY DR. EDW. J. BERNSTEIN, OF BALTIMORE.

(Extract from *Maryland Medical Journal*, February 21, 1891.)

In this very elaborate paper, Dr. E. J. Bernstein says: (p. 361). . . In my first case of diphtheria I began the use of Sulphide of Calcium, but finding that not only was it disagreeable to both taste and smell, and that it also soiled the bed linen and clothing of the patient, but that the disease continued to get worse, that the membrane which at first was limited to large necrotic patches on the tonsils, now covered the entire anterior pillars of the fauces and the uvula, which was now considerably swollen.

I discarded the nostrum and began the use of Hydrogen Dioxide, which I directed to be sprayed into the throat every hour of the day and night, gradually relaxing the number of night-sprays as the case went on to improvement. I also directed that the nose should be sprayed at least twice a day with the same solution. Within a few hours the mother said she noticed a change for the better in her child, and when I made my evening call it was quite perceptible. I also noticed, which fact I have since seen corroborated by others who had used the drug, the better color of the child. The lips, which before its administration were quite blue, were now of a healthy red color. The membrane in the throat had made no increase. By the following morning

there was a decided decrease in the pseudo-membrane, and from now on began to disappear.

In conjunction with the above local treatment, I gave large doses of tinc. terri chlo. in combination with tonic dose of quinia every three hours.

Cream of tartar lemonade was given ad libitum to appease thirst and to relieve congestion. The air of the room was regularly charged with steam, generated on a small alcohol stove, to which had been added an alcoholic solution of menthol, eucalyptol and thymol. It is well to say that the strength of the hydrogen dioxide was 50 per cent. of Ch. Marchand's 15-volume solution.

In three other cases which came under my observation, I followed out the same line of treatment, and each recovered without any untoward after effects. In the hope that some of you here this evening may be induced to try this plan of treatment, I submit this paper.

HYDROGEN PEROXIDE IN DIPHTHERIA.

By G. F. ADAMS, M.D., OF PULASKI, N. Y.

(Published in the *Medical Era* of Chicago, Ill., March, 1891.)

The article in the December "Era" copied from the "Medical Times," by Dr. George W. Major, in regard to the use of Peroxide of Hydrogen in diphtheria, I can heartily indorse. I have just discharged three cases of diphtheria that I treated with Ch. Marchand's Peroxide of Hydrogen. I sprayed the throat with an atomizer filled with full strength 15-volume solution of peroxide in the early stages. The membrane was removed almost at once, and after the first application and one complete clearing of the throat, I then reduced the 15-volume solution by adding three parts water to one of peroxide, and by spraying the throat thoroughly as often as once an hour, all membrane was destroyed, the breath was kept sweet, and the throat in a fairly comfortable condition. When used at first in full strength the patient may complain of a slight smarting, but no irritation results.

The atomizer should consist of nothing but glass and rubber, as the peroxide has a strong affinity for all metals, except gold, silver, and the rare metals.

I can assure all who try Peroxide of Hydrogen as a local application in diphtheria that they will be thoroughly well pleased with it.

SCARLATINAL DIPHTHERIA.

By WM. F. WAUGH, M.D.

(Extract from *The Times and Register*, Philadelphia, March 7, 1891.)

I desire to place upon record a case that is unique in my own experience; though my readers may, perhaps, have had better results. The case was that of a child under four years of age. He had been attended by a dispensary physician during the first part of the illness; and this gentleman, when he gave up the case, had given a gloomy prognosis, with which I heartily coincided. On my first visit I found the child's throat covered with blackish sloughs, the lips and tongue covered with fissures and ulcers, the nose discharging freely the irritating and offensive secretion of nasal diphtheria, the eyes showing spots of pus at the inner canthus. The child complained of carache and of pain in the forehead, so that the disease had passed up the Eustachian tubes and into the frontal sinuses. Reddish spots and blotches appeared on the face and body. The stench was dreadful, the urine almost totally suppressed, but the few drops that were passed could not be saved for examination. The child had been delirious for

some time, not being able to recognize his parents. The one good point was that his stomach retained milk fairly well.

It has not been my good fortune to witness the recovery of many such cases. In fact, the more extended is my experience with diphtheria, the more I dread it; especially when it has become firmly established in the Schneiderian mucous membrane, and in the passages leading from the naso-pharynx.

I felt it my duty to inform the parents that death was the only result to be expected; and that they could be very thankful if their other children, six in number, should escape.

However, I gave them a bottle of Marchand's Peroxide of Hydrogen, and directed them to syringe the nostrils and wash the mouth out with the solution diluted to one-fourth its strength. *This was repeated every hour, day and night.* No other treatment was employed, and whiskey was given with the milk, as the only food. The child began at once to improve; the right tympanic membrane gave way, and then the solution was thrown into the ear, and bubbled out at the nose. The urine began to be secreted more freely, and the child was pronounced out of danger in one week from my first visit.

One of the other children was seized with sore throat, enlarged tonsils and torticollis; another had a mild attack of scarlatina, but the others escaped without contracting the disease. This in itself is notable, as the children were all kept at home, in a crowded little house, with miserable sanitation.

THE PEROXIDE OF HYDROGEN—ITS USES IN ABDOMINAL SURGERY.

By CHARLES P. NOBLE, M.D.,

Surgeon-in-Charge of the Kensington Hospital for Women, Philadelphia.

(Published by *Philadelphia Medical News*, April 11th, 1891.)

The importance of the Peroxide of Hydrogen as a germicide, and more especially as a pus-destroying agent, is becoming firmly established by rapidly accumulating clinical evidence. A very considerable experience with the drug has made me enthusiastic concerning its remarkable qualities; and I find myself extending its application almost daily. In general, in order that antiseptic or germicidal agents may be used effectively, it is absolutely essential that all foreign material, discharges, etc., be first removed, so that the agent may be brought in direct contact with the surface or tissue to be acted upon. It is also true that the power of penetration of the antiseptics in common use is slight, so that they are reliable only in combating strictly superficial septic processes. This is particularly true of corrosive sublimate solution, which, by its action on albuminous discharges, forms an impenetrable covering which prevents the solution from coming in contact with the tissues to be acted upon. In this respect the action of the peroxide solution is essentially different. It attacks, disintegrates and oxidizes all discharges and dead tissue with which it comes in contact, thus favoring its contact with and action upon underlying tissues. Moreover, the products of its activity escape as water and carbonic acid gas. At this time I do not propose to discuss the relative value of the peroxide of hydrogen as a germicide. I believe that our knowledge upon that subject will be far more exact after a little time than it is at present. The fact, however, that this agent has the power to oxidize dead organic matter suggests to my mind a wide field of usefulness for it in preventing sapremia or ptomaine poisoning, in the treatment of suppurating tracks and cavities in which dependent drainage cannot be had, and in which free irrigation with water is impracticable.

In my work in abdominal surgery I have found Peroxide of Hydrogen of positive value.

In cleaning the hands preparatory to operation I have found it very useful, especially when the skin about the finger-nails has become somewhat horny or roughened from too much use, or from frequent washings, or from prolonged contact with antiseptic solutions. Its power to loosen and to remove dead epithelial cells, and to soften the skin about the nails, is quite remarkable. Moreover, all foreign material about the nails is either oxidized and removed or is made more accessible to the sublimate solution which is used later. In practice I have used the peroxide after scrubbing my hands through three waters with soap and the nail-brush, then soaking them in turn in saturated solutions of permanganate of potassium and of oxalic acid, and before soaking them in corrosive sublimate solution.

Bacteriological examinations have shown that even this method (omitting the peroxide solution) does not make aspsis certain, as germs have been removed from the subungual spaces after it has been faithfully carried out. I have not been able to test the value of the addition of the peroxide of hydrogen solution in securing aspsis by bacteriological experiments, but practically I feel convinced that it is of service in securing that end. The settlement of the question authoritatively will be of great interest to all those who believe in satisfying an antiseptic conscience.

In the management of the drainage-tube after abdominal section, under special conditions, the peroxide solution has been of signal service. In typical cases, in which the drainage-tube is removed after from one to three days, there is no indication for its use. But when from any cause the drainage-tube must remain in longer, it is useful in keeping the tube and drainage track sweet and free from pus. On a number of occasions after a tube had been in place from a week to ten days, and the discharge had become slightly purulent, I have been able to combat successfully the tendency to suppuration, to shorten the tube gradually, finally to substitute a gauze plug for the glass tube, and to secure rapid healing of the drainage track; when otherwise a sinus would have resulted. One such case was one of a ruptured large ovarian tumor, having contents of a jelly-like consistency, which had become distributed throughout the peritoneal cavity. Jelly-like material was discharged through the tube for two weeks, and yet by the use of the peroxide solution rapid healing was obtained. Another case was one of post-operative intra-peritoneal hemorrhage. Tarry blood was discharged through the tube for ten days, yet the same care secured the same result. Another striking case was one of fecal fistula which formed after the removal of a dermoid ovarian cyst—presumably caused by the growth of a small bunch of hair from the cyst into the bowel. The track was kept clean and the peroxide was used freely. The fecal fistula closed in three weeks, and the remaining sinus closed within two months from the date of operation, being kept open for a time by an infected omental ligature, and closing promptly after its discharge.

The peroxide solution has been applied to the drainage track and to the inside of the tube by saturating absorbent cotton, held in a slender long-handled forceps, and passing this down the tube. The peroxide solution has been used pure or diluted one to two or three.)

I have not used the peroxide solution within the peritoneal cavity during operation, but believe it will prove useful in disinfecting infected pedicles. In removing pus sacs rupture frequently occurs, deluging the broad ligaments with pus. Under these circumstances the ligature applied to secure the pedicle necessarily becomes infected. Heretofore I have washed away septic material with boiled water, and later applied bichloride solution on a sponge to the region of the ligature. In such cases it seems probable that the peroxide solution will be of real value.

In cleaning the abdominal wound preparatory to removing the sutures, the peroxide solution has proven very efficient: especially if a dry dressing—boric acid or iodoform—has been used. Finally, if any pus has formed in the track of the drainage-tube or of any of the sutures, the peroxide solution will remove it more efficiently than any other agent.

TESTIMONIALS.

INDIANAPOLIS, IND., *February 5, 1886.*

Dear Sir: I find Marchand's Peroxide of Hydrogen a very superior article, and shall take great pleasure in recommending it. Please send me, by express, 10 more 1 lb. bottles of the 15 volume—the freshest you have.

Yours truly,

WM. B. CLARKE, M.D.,
No. 2 W. Market Street.

SEWARD, NEB., *December 23, 1886.*

Dear Sir: I have been using Charles Marchand's Peroxide as a local application to diphtheritic exudations, and as a dressing for pus-discharging surfaces, with unparalleled success. In my practice of twenty years' standing, I never have been acquainted with a remedy of equal potency in dissolving pus cell-formation, and arresting the condition on which it depends.

Respectfully yours,

J. H. WOODWARD, M.D.

CHARLES MARCHAND, Esq.

BROOKLYN, *January 21, 1887.*

Dear Sir: Your letter was received yesterday.

I have tried the Glycozone with very gratifying results, and think it superior to the ordinary preparation of H_2O_2 .

I apply it as a dressing, on absorbent cotton, to sloughing and ulcerated surfaces, and think it superior to any other preparation I have ever used for that purpose. Applied twice daily it keeps the diseased surface perfectly clean and sweet, and rapidly stimulates healthy granulations.

Its absolute purity does away with the necessity of neutralizing the acid found in ordinary preparations of H_2O_2 , and, therefore, makes it most valuable as a remedial agent. I generally apply as a dressing 2 volumes strong. In ulceration of the cervix uteri, applied on absorbent cotton, it is "safe, sure, and speedy" in its action.

Sincerely yours,

DR. W. W. BLACKMAN,

Prof. Medical College, 23d Street and 3d Avenue.

BOSTON, *February 17, 1887.*

Dear Sir: Will you kindly forward me by express, as soon as possible, one-quarter dozen Charles Marchand's Hydrogen Peroxide (15 vol. Med., use)? The package I received some time since I divided among three patients of mine, and to say that I am charmed with its action but feebly expresses it; I am already enthusiastic.

Very truly,

H. E. SMALL, M.D.,
690 Shawmut Avenue.

INDIANAPOLIS, IND., *February 18, 1887.*

Dear Sir: Send me, by express, one dozen pound bottles of H_2O_2 .

Regarding Glycozone, I consider that it will be of great use to surgeons. I have observed that, applied to old sores, it at once renders them bright colored, and soon encourages healthy action by virtue of its power as an oxygenizer.

Yours truly,

WM. B. CLARKE, M.D.

NEW YORK, *April 14, 1887.*

Dear Sir: Speaking personally, Charles Marchand's Peroxide used at the Hospital (Metropolitan Throat Hospital) gives the most perfect satisfaction, both as a disinfecting and cleansing agent, among the chronic and severe cases of nasal and pharyngeal affections.

Yours truly,

DR. G. B. HOPE.

HOLYOKE, MASS., *May 27, 1887.*

Dear Sir: Last March I read a paper before the Vermont State Dental Society, entitled "Growth, Development, and Treatment of Alveolar Abscess." This paper will be published in the July number of the *Independent Practitioner*, and will be illustrated. Peroxide of Hydrogen is my stronghold in the treatment of these abscesses; in fact, is my main reliance. I have used the peroxide a little over fifteen months, but until I was at your place, the 13th of last month, I have had a great deal of trouble in getting it, and what I have had has been very weak. Among my dental friends the inquiry has been, "Where can we get good Peroxide of Hydrogen?" Since using Charles Marchand's Peroxide I am very much pleased with it, and can heartily recommend it to my friends.

Yours truly,

GEO. A. MAXFIELD, D.D.S.

PARK RIDGE, N. J., *June 17, 1887.*

CHARLES MARCHAND, Esq.

Dear Sir: I have now used Charles Marchand's Hydrogen Peroxide and Glycozone for some time. I have been surprised at the results which I obtained by their employment as antiseptic agents when applied to ulcerated and gangrenous surfaces. In the treatment of all classes of wounds I consider them far superior to any of the most favorite methods now practised, leaving the surface clean and free from pus, promoting healthy granulations in a very short period, and, above all, is undoubtedly the cleanest dressing that can be had, as there is no bad smell when properly used. I have also used the peroxide with excellent results in ulcerative sore throat. In gonorrhoea I have used the Glycozone as an injection, with great satisfaction, the discharge ceasing immediately. I write these few lines to you to inform you of my first experience with these two remedies. My conclusions, so far, are that I shall never treat the above-mentioned diseases in any other way after this than with them. I shall in a few weeks have prepared the history of several cases which I have now in treatment, and which, I think, will prove beyond doubt, that in these two remedies we possess the most efficient means which we can desire, in the treatment of wounds and ulcerations.

Yours truly,

EUGENE JEHL, M.D.

12 W. 30TH STREET, NEW YORK, *September 10, 1887.*

Dear Sir: Please send me three dollars' worth of Charles Marchand's Peroxide of Hydrogen, same as you furnished me last January. I found it an admirable article.

Yours truly,

HENRY C. HOUGHTON, M.D.

OLEAN, N. Y., *October 3, 1887.*

Dear Sir: Enclosed please find draft for \$2.50. Please send me one pound of Charles Marchand's Peroxide of Hydrogen, 15 volumes solution, and one-half pound of Glycozone. The Peroxide of Hydrogen received a few weeks ago is a splendid preparation, and has done me noble service. Please ship by express as soon as possible, as I am nearly out.

Very respectfully,

J. F. STEYNER, M.D.

NEWARK, N. J., *October 18, 1887.*

MR. CHARLES MARCHAND, 10 W. 4th Street, N. Y.:

The bottle of Peroxide of Hydrogen sent proved very satisfactory. Please send a pint of the same, etc.

Yours truly,

ELEANOR HAINES, M.D.

NEWARK, *October 5, 1887.*

MR. CHARLES MARCHAND.

Dear Sir: In reply to your letter on the 5th, I will say that the "Glycozone" has had a good trial in nasal treatment. I found its results gratifying.

I remain, yours respectfully,

H. L. KNAUBER, M.D.

GREAT BEND, KAN., *December 13, 1887.*

Dear Sir: The Charles Marchand Peroxide of Hydrogen sent me is a charm. It is my stronghold in the treatment of all abscesses, alveolar, etc., in which cases I have had under treatment since I received it; my results have been a quick success in every case. I most heartily recommend it to dental profession.

The Charles Marchand's Peroxide of Hydrogen is an excellent preparation; no professional man should be without it.

DR. JNO. C. WALKER.

ST. LOUIS, *December 23, 1887.*

MR. CHARLES MARCHAND:

I use the Peroxide of Hydrogen very much in diphtheria, and have always had trouble to find a reliable article. I shall use Charles Marchand's Peroxide exclusively hereafter.

T. GRISWOLD COMSTOCK, M.D.,

507 N. 14th Street.

BOSTON, *January 17, 1888.*

I am pleased with the results of Charles Marchand's Peroxide of Hydrogen used as a therapeutic agent, and have done my part in Boston among our pharmacists to draw their attention to it, as I made inquiries at all our first-class houses and found I could not obtain it. Dr. Blackman was the first person to call my attention to it, and from the high recommender he gave I was led to use it in a minor surgical case a year ago. It delighted me, and I do not feel equipped in my office without it now.

Yours respectfully,

DR. J. K. CULVER,

698 Tremont Street.

BALTIMORE, MD., *February 23, 1888.*

Dear Sir: I have been using Charles Marchand's Peroxide of Hydrogen (medicinal) for some time as ordered through Lilly, Rogers & Co., of this city, with very good benefit. When its value becomes better known by members of our profession and others, I have no doubt you will have a large sale.

W. R. MONROE, M.D.,

1734 Bolton Street.

NEW YORK, *June 5, 1888.*

MR. CHARLES MARCHAND.

Dear Sir: Allow me to commend your Peroxide of Hydrogen and Glycozone in the highest terms, as the most powerful of all antiseptics at present to me known. I have, after making a trial with the above-mentioned preparation in over one hundred cases of diphtheria in my clinic at the Eastern Dispensary, and with forty cases of diphtheria which have undergone the operation of intubation of the larynx by me, used in all these cited cases ozonized vapor and topical application, with fine camel's-hair brush of the five-volume solution of Peroxide of Hydrogen every three hours; the Glycozone was applied in the same manner, only to repeat again with praise, that my expectations of these preparations have been fully realized. These have been recommended by me to all my colleagues, and spoken of the results that were obtained with such harmless, non-poisonous, curative, and powerful antiseptics. I make use of the Peroxide of Hydrogen and Glycozone in my office practice for nose, throat, and chest diseases, in all forms of application, as the ozonized vapor spray, local application, etc., with satisfaction to myself and patients, and hope that the further returns will agree with what my experience has taught me. In whooping-cough the ozonized vapor has rendered me extensive valuable service.

DR. J. MOUNT BLEYER,
83 Second Avenue.

INDIANAPOLIS, IND., *June 4, 1888.*

Dear Sir: We have used Marchand's Peroxide of Hydrogen in the past and liked it very much, but by some means were induced to try a peroxide manufactured in St. Louis, which we thought to be a good article for a time.

Now we have decided to return to the Marchand's Peroxide of Hydrogen, and wish you to send us one dozen one-pound bottles at your earliest convenience.

Yours,

O. S. RUNNELS, M.D.,
50 Circle Street.

BROOKLYN, N. Y., *July 14, 1888.*

Dear Sir: Please deliver to bearer two bottles Ch. Marchand's Peroxide of Hydrogen. I have used it in bronchitis and consumption with gratifying results.

Yours truly,

E. H. MUNCIE, M.D.,
363 Tompkins Avenue.

TOPEKA, KAN., *November 21, 1888.*

I have never used anything that gives me such universal success in the treatment of diphtheria, catarrh, and many other equally difficult diseases to treat successfully, as Ch. Marchand's Peroxide of Hydrogen (medicinal). I really do not know what I would do without it. Only a few months ago I would not have promised cures that I now have no hesitancy in guaranteeing. To me it approaches wonderland. I have done so much with it that has startled me, that I do not now think anything impossible in its therapeutic sphere.

DR. W. T. BRANSTRUP, *Secretary Board of Health.*

CAMBRIDGE, MASS., *February 6, 1889.*

CH. MARCHAND, Esq.:

Dear Sir: I am glad to learn that you have decided to put up your Peroxide of Hydrogen in 4 oz. bottles.

I think that this departure will be appreciated by the dental profession as soon as it becomes known. Dentists have heretofore had great difficulty both in procuring and keeping such a desirable compound. Now we shall be enabled to have a fresh supply to uncork at more frequent intervals.

DR. H. E. CUTLER,
432 Harvard Street.

125 E. 25TH STREET, NEW YORK, *June 6, 1889.*

MR. CH. MARCHAND:

In reply to your favor, relating to our experience in the French Hospital with your Peroxide of Hydrogen and Glycozone, I will state that after a year's trial in a great many cases of obstinate chronic ulcers, carbuncles, and wounds of all types, we have obtained such favorable results that we now employ them almost exclusively.

Their advantage over other disinfectants and antiseptics is, in my estimation, their easy application, quick action, and freedom from danger of absorption.

Yours very truly,

J. J. HENNA, M.D.

DELAWARE, O., *September 28, 1889.*

Please send me two Hand Atomizers and Ozonizers for using Marchand's Peroxide of Hydrogen, such as I got for my own use some time ago.

I like the method of treating catarrh and throat troubles very much.

Yours truly,

M. P. HUNT, M.D., *Surgeon.*

QUINCY, ILL., November 18, 1889.

I have been using Marchand's Peroxide of Hydrogen almost three years and feel no hesitation in asserting that for purity, strength, and stability it excels any make with which I am acquainted. I have employed it in a great variety of cases, both internally and topically, and have derived such uniform success with it that I have come to look upon Charles Marchand's remedy as one of the most valuable in the materia medica.

My experience leads me to believe that its range of application has been limited too much to surgical affections. I employ it almost daily as an internal remedy and derive most gratifying results. It is not only useful in diseases of the respiratory organs, but also in almost every affection of the alimentary tract, in rheumatism, anæmia, chlorosis, neuralgia, typhoid, and a host of other diseases.

Trusting that your Peroxide of Hydrogen may meet with the universal recognition which its merits deserve,

I remain, yours respectfully,

C. E. EHINGER, M.D.

OFFICE BOARD OF HEALTH,

TOPEKA, KAN., December 19, 1889.

Dear Sir: I am of the same opinion I was when I wrote to you on the 1st of November, 1888, only I am more charmed with the effects of Marchand's Peroxide of Hydrogen medicinal. I have no words to express my admiration of its wonder-working powers.

W. T. BRANSTRUP, M.D., Secretary.

HOLYOKE, MASS., December 24, 1889.

I will say that Charles Marchand's Peroxide of Hydrogen (medicinal) is a necessity in my practice and treatment of pulpless teeth, alveolar abscess, etc. It is my main reliance. I have used it about two years and I am perfectly satisfied with it.

GEO. A. MAXFIELD, D.D.S.

OLEAN, N. Y., Dec. 24, 1889.

Peroxide of Hydrogen is of inestimable value to me in the antiseptic treatment of old chronic sores, abscesses, and suppurating surfaces of all kinds. It is the ideal antiseptic in diphtheria, instantly removing all fetor and rapidly dissolving the membranes. I have used Glycozone in Leucorrhœa with great satisfaction. I have used all brands of Peroxide of Hydrogen, but prefer the Marchand's, on account of its strength and keeping qualities.

J. F. STEYNER, M.D., U. S. Examiner Surgeon.

NEW YORK, December 24, 1889.

Dear Sir: Let me endorse my statements of two years since, which I am able to do with emphasis. Peroxide of Hydrogen is an agent unique; no other takes its place in treatment of suppurative disease of the middle ear; it is of special value in the treatment of cases complicated by polyp and exuberant granulations; also in necrosis, or caries, as it can be forced into cavities and sinuses, where it acts as no other applicant can act. In prescribing it I have sometimes been disappointed, but never when able to get your brand. Yours,

H. C. HOUGHTON, M.D.,

President of the College of the New York Ophthalmic Hospital,
7 W. 39th Street.

INDIANAPOLIS, IND., December 25, 1889.

Further experience only confirms my statement in the *Chicago Medical Era*, of July, 1888, that Hydrogen Peroxide is the most powerful yet absolutely harmless anti-putrid topical application known, and consequently unsurpassed as a cleanser of, and dressing for, pus-discharging surfaces, and to prevent the process of pus forming. Many cases of Pyæmia, Septicæmia and blood-poisoning would be prevented were its use more general. While it is but fair to acknowledge that several large chemical works produce a good article of it, I am free to say that my preference is for the Marchand brand, because of the good work it has done for me, and because its maker is exclusively in the manufacture of it and its congeners, hence more likely to keep up and even improve, if possible, its high standard. Its principal congener, Glycozone, is as valuable, when indicated, as, in my opinion, it is when a slower yet more continued action is desired.

WM. B. CLARKE, M.D.,

Secretary Indiana Institute of Homœopathy.

ITHACA, N. Y., December 26, 1889.

I have used Marchand's Peroxide of Hydrogen (medicinal) in the treatment of Bronchitis, Asthma, and Amenorrhœa, caused from debility, with satisfactory results. I consider it a valuable tonic and antiseptic.

A. BISHOP, M.D.

ST. LOUIS, December 27, 1889.

I have used Ch. Marchand's Peroxide of Hydrogen (medicinal) daily for a number of years, and I must say it has proved itself a most valuable remedy. I use it diluted with water as a spray for catarrhal complaints, pure as a spray or a gargle for Diphtheria, and as a vapor when combined with glycerine for Hay Fever, Bronchitis, Asthma, and Phthisis. Have also used it as a cleansing wash for old ulcers.

Have also used Glycozone, both internally and externally, and would not be without it. Its uses are manifold, and will amply repay any physician for using it.

W. N. BAHRENBURG, M.D.,

619 Wash Street.

SIDNEY, OHIO, December 25, 1889.

I can only speak in the highest terms of Ch. Marchand's Peroxide of Hydrogen (medicinal) and Glycozone. Other preparations of Peroxide of Hydrogen have been recommended to me, but I only tried them when I soon abandoned them to return to Marchand's, and in future shall only use this brand. It never fails to do its work.

H. E. BEEBE, M.D.

ST. LOUIS, December 28, 1889.

I have used Marchand's Peroxide of Hydrogen (medicinal), H_2O_2 , since about December, 1884, so that I regard myself as one of the first to recognize its peculiar virtues. I find medical gentlemen in societies speaking freely about it and extolling its merits. It is certainly most excellent in diphtheria and a host of other affections where there is any abnormal secretion set up. I have used it with good effect in some cases of fistula in ano, where the sinus was very much circumscribed (short), and had not lasted long. As regards Glycozone, I found it to be very practical in ill-conditioned ulcers, in sinuses that are indolent and will not heal on account of the presence of a pyogenic membrane.

T. GRISWOLD COMSTOCK, M.D.

BURLINGTON, IA., December 29, 1889.

CH. MARCHAND, Esq.:

I have used with great satisfaction both of your preparations. The Hydrogen Peroxide (medicinal) is the best I have ever used; but to the comparatively new drug, "Glycozone," I must give all praise. I am simply surprised and delighted with results following its use. In all cases where an emollient seems indicated it has proven more than satisfactory. I can confidently recommend Glycozone as an application to allay irritation, alleviate inflammatory soreness, swelling and pain. I have been remarkably successful with it in treating Phagedenic Pericementitis, commonly known as Pyorrhoea Alveolaris. I use it in all abscessed conditions. I have delighted several patients by correcting an offensive condition of the breath. In a word, I cannot now think of being without Glycozone, and to that end I lecture to my class at the State University. I am sorry my time will not allow me to detail cases and to say more in favor of Glycozone, as I know of its value. One great advantage Glycozone has is the fact it will not coagulate albumen; at least it so responds to my tests with egg albumen.

R. L. COCHRAN, D.D.S.,

State University of Iowa, Dental Department.

MARIETTA, GA., December 30, 1889.

I have used Ch. Marchand's Peroxide of Hydrogen (medicinal) in many cases of diseases of the throat and nasal passages, and am using it now almost every day, and consider it a very useful remedy in all diseases of the mucous membranes.

P. R. CORTELYOU, M.D.

CAMBRIDGE, MASS., December 30, 1889.

I am using Ch. Marchand's Peroxide of Hydrogen (medicinal) constantly in my dental practice, and find it to be a reliable compound, as it gives uniformly excellent results.

H. E. CUTTER, D.D.S.,

432 Harvard Street.

LINCOLN, NEB., December 31, 1889.

We have used Marchand's Peroxide of Hydrogen for two years, and can say that we are well pleased with it. We use it in Typhoid Fever where there is foul discharges, brown tongue, etc.; ten drops in water every two hours will cleanse the mouth and tongue and dispel the bad smell from breath and discharges in from twenty-four to forty-eight hours. Also, it is well taken by the weakest stomach in foul or sloughing sore throat, Diphtheria, and Croup. It is a safe and reliable remedy.

DRS. BENTLEY & MAXON.

ST. LOUIS, December 31, 1889.

I believe that I was among the first to use Peroxide of Hydrogen in this city years ago, and of various solutions that I have tried. I give Marchand's Peroxide of Hydrogen (medicinal) the preference over all others. The ordinary Peroxide of Hydrogen, as prepared and used for bleaching purposes, has an over-proportion of acid and is very irritating to mucous surfaces. As a cleansing and disinfecting agent, Marchand's Peroxide of Hydrogen is unequalled. I have used it extensively in diseases of the nose, throat, and ear, and even certain eye troubles, with the greatest satisfaction to myself, both in private practice and in hospital and clinical work.

JAMES A. CAMPBELL, M.D.,

1729 Washington Avenue.

CONNELLSVILLE, PA., January 1, 1890.

I have had an extended trial of five years with Marchand's Peroxide of Hydrogen (medicinal), and in that time have probably used 200 bottles. I obtain it through Jno. Wyeth & Bros., of Philadelphia. I have but lately received two dozen bottles. I employ it in Phthisis, Bronchitis, nose and throat affections, as a spray and by inhalation by means of hot water. Think it of great, very great value in Diphtheria. Have within fifteen days employed it as a spray in membranous croup every hour or half hour: child of 7 a girl was given up on 8th of December by attending physician. I succeeded to this physician in the case, which I cured on the 23d day. Used, of course, heart stimulants, etc., and full feeding. I attribute the cure very greatly to employment of the Peroxide of Hydrogen.

I. BRANDT ENOS, M.D.

UPPER MONTCLAIR, N. J., *February 1, 1890.*

CHARLES MARCHAND, Esq.,

I wish to convey to you my appreciation of your efforts to supply the profession with a reliable Peroxide of Hydrogen. It will be conceded by the medical fraternity that no more powerful agent can be placed in their hands, for curative measures, than a preparation of oxygen, and to your efforts are we to-day enabled to command a reliable and comparatively stable agent.

I am induced to speak well of your special preparation through my practical experience with it. My most extended acquaintance with your Peroxide and Glycozone has been in the use of them in cases of Nasal Catarrh and abnormal uterine discharges.

In this peculiar class of troubles I can fully coincide with all of the enthusiastic utterances which have from time to time come within my hearing.

I can also add that I am fully convinced that no application equals your two preparations in the dressing of wounds, more especially those showing marked loss of tissue. This I have proved in a large number of accidents to railway employees, where the conditions for rapid healing have been of the worst character, and have not failed to get marked improvement after the systematic use of both medicaments.

DR. MORGAN WILLCOX AYRES.

BALTIMORE, *January 1, 1890.*

The topical application of oxygen is capable of immense benefit. In the pitting of small-pox I most earnestly advocate and urge its use, either in the form of Glycozone or properly diluted Marchand's Peroxide of Hydrogen (medicinal). I believe much deformity can be obviated by its use, and the force of the disease lessened. Foul and indolent ulcers, when treated by iodoform, carbolic acid, etc., are apt to poison the patient; such cases have occurred. With oxygen that would be impossible. In large suppurating sores, where the various germicides are dangerous on account of the large breach of continuity and absorption of the poison, the topical application of oxygen is perfectly safe, and, to say the least, equally efficacious.

Ophthalmia is advantageously treated by the topical application of either the Peroxide or Glycozone. Styes can be aborted if Glycozone be rubbed on the lids at the commencement; and as styes are painful and the swelling and pain last for a few days, the use of Glycozone is satisfactory to both patient and physician. In nasal catarrh, when the mucous membrane is dry and crusts form, prompt and more satisfactory results can be obtained from Glycozone than from any other means known. In the various chronic inflammations of the throat which are ordinarily obstinate to treatment, I have frequently satisfactorily treated by the Peroxide (diluted), especially when the orifice of the eustachian tube was closed by swelling, and the patient rendered uncomfortable by temporary deafness and ringing in the ears.

DR. J. H. DEWOLF,
519 N. Charles Street, Baltimore, Md.35 W. 40TH STREET, NEW YORK, *January 1, 1890.*

I have made constant and extensive use of Marchand's Peroxide of Hydrogen (medicinal) and Glycozone ever since they were first placed on the market, and found both of these remedies to fulfil all the claims made for them.

DR. F. G. WELCH.

PEMBERTON, N. J., *January 1, 1890.*

I have used Marchand's Peroxide of Hydrogen (medicinal) in cases of debility arising from asthma, and consider it one of the most valuable tonics and restoratives in the *matéria medica*. I consider Marchand's preparation among the very best.

W. L. WOODRUFF, M.D.

BROOKLYN, N. Y., *January 3, 1890.*

I am pleased to say that I am delighted with the beneficial results I have experienced in the use of Marchand's Peroxide of Hydrogen (medicinal). In asthma, catarrhal diseases of the nose and throat, it is wonderfully efficacious and very convenient of application.

EDWARD H. ASHWIN, M.D.,
Major and Surgeon 47th Regiment, National Guard, N. Y.DUNKIRK, N. Y., *January 4, 1890.*

My experience with Marchand's Peroxide of Hydrogen (medicinal) in practice is very limited. I have used it chiefly for cleaning out foul pus in suppurative otitis, and have found it very satisfactory for this purpose. Have also used it for a similar purpose in purulent conjunctivitis with good results.

DR. GEORGE E. BLACKHAM,
305 Central Avenue.BOSTON, *January 2, 1890.*

CH. MARCHAND, Esq.:

In answer to your inquiry concerning my present opinion of your Peroxide of Hydrogen (medicinal), let me say that it retains in my armament the same high position as formerly; added experience gives a wider range to its usefulness. Without writing you a long article I could hardly explain my uses of it, for there is not a form of depression of the system in which the preparation is not of value, it intelligently handled. I have used all the common brands of peroxide, and commend yours most heartily.

Glycozone will cure gonorrhœa in a safe and painless manner; it is equally efficacious in the leucorrhœa that accompanies cervical ulceration; it destroys diphtheritic exudations; and, in general, wherever pus is formed in the economy. Glycozone is my most valued helper; hence its maker may feel sure of the friendly regard of

HERBERT E. SMALL, M.D.,
690 Shawmut Avenue

I have used Marchand's Peroxide of Hydrogen (medicinal) for several years past, and I consider it one of the most valuable drugs the surgeon can call to his aid. I know of nothing that will take its place in a number of different conditions that the surgeon might meet daily. As a cleanser, stimulant, and antiseptic in the treatment of all suppurating cavities or surfaces it has no equal.

LOUISVILLE, KY., January 6, 1890.

A. MORGAN VANCE, M.D.

Would say, in connection with my specialty, "Electro-therapeutics," I have used Marchand's Peroxide of Hydrogen (medicinal) in catarrhal diseases, nasal and pharyngeal, quinsy, tonsillitis, and conjunctivitis with most satisfactory results.

PITTSBURGH, PA., January 6, 1890.

S. L. JOHNSON, M.D.,

No. 30 Ninth Street.

From the experience I have had with Marchand's Peroxide of Hydrogen (medicinal), I am well pleased with it, and as a mild, harmless, and efficient remedial agent, either alone or accompanied with Glycozone, wherever an antiseptic is needed.

JERSEYVILLE, ILL., January 6, 1890.

WM. W. ESTABROOKE, M.D.

I have used Marchand's Peroxide of Hydrogen (medicinal) and Glycozone with the most gratifying results to my patients and to myself. As disinfectants and curative agents Peroxide of Hydrogen (medicinal) and Glycozone have no equal. Marchand's H_2O_2 will prevent and remove the discoloration of bruises. Hence it will be found very useful in cases of accidental injuries about the face or eyes. I can heartily recommend both preparations as elegant and powerful curative remedies.

LAFAYETTE, IND., January 6, 1890.

S. T. YOUNT, M.D.,

Vice-President Indiana State Medical Society.

I have made use of ozone as an adjunct to treatment of throat diseases for years. I regard Marchand's Peroxide of Hydrogen as the best remedy.

BOSTON, MASS., January 7, 1890.

A. W. K. NEWTON, M.D.,

528 Tremont Street.

I can unhesitatingly say I consider Marchand's Peroxide of Hydrogen (medicinal) the most powerful and harmless of all the antiseptics known to the medical world. I have used it in all diseases of the throat and nose with perfect satisfaction to myself and patient. Glycozone I have used in all diseases of the stomach, with gratifying success. I consider it an invaluable way of administering ozone. It is the germicide *par excellence* in foul sores and cancers.

WAKEFIELD, MASS., January 8, 1890.

H. F. BRADBURY, M.D.,

Professor of Therapeutics, University of New Hampshire.

69 W. 105TH STREET, NEW YORK CITY, January 9, 1890.

I am in constant use of Marchand's Peroxide of Hydrogen (medicinal), and find an increasing utility in it. It can be utilized in so many ways in these antiseptic days by the busy practitioner.

IRETUS G. CARDNER, M.D.

BALTIMORE, January 10, 1890.

After several years' experience in the use of Peroxide of Hydrogen and Glycozone as therapeutic agents, prepared by Prof. Ch. Marchand, of New York, the undersigned is prepared to say that he has found them, especially the former (mostly used by him), never failing so far as has been prescribed and used by him. He feels constrained to endorse all that Prof. Marchand claims for the use of oxygen, as set forth by him in his pamphlet, so far as his observation and experience extend. *First*, as being one of the most powerful and harmless of all antiseptics known. *Second*—as being especially adapted to the speedy relief and cure of diseases of the mucous surfaces, especially those of the mouth, nose, throat, bronchial tubes, and lungs; also of the stomach and the entire alimentary or intestinal canal. *Third*—Externally for abscesses, sores, ulcers, etc. *Fourth*—For genito-urinary ailments, especially the reproductive organs of the female. *Fifth*—For general physical debility and nervousness, taken internally, it is rejuvenating, strengthening, and tonic. *Sixth*—Oxygen is absolutely important and invaluable in cases of emergencies, to which the physician is often urgently and hastily summoned to administer, and to restore the dying or apparently dead: as in asphyxia, poisoning, fainting from almost any cause, from loss of blood in profuse hemorrhages, etc.

The portable and convenient form of Peroxide of Hydrogen as prepared by Prof. Marchand, as well as Glycozone, commends the use of the same to the active and busy physician as being so readily used and easily carried in a vial or small bottle in his pocket or satchel for immediate use in unexpected cases of accident or heart failure, or persons in a supposed dying condition.

W. ROBT. MONROE, M.D.,

Late Prof. of Therapeutics and Dean in the Baltimore Medical College.

1734 Bolton Street.

CINCINNATI, O., January 11, 1890.

I have used Marchand's Peroxide of Hydrogen and Glycozone for one year, and have always found it reliable for certain specialties. I have made a clinical test in competition with other makes which have been recommended for similar purposes, and found it superior in efficacy.

H. DWYER, M.D.,

90 E. 3d Street.

MINNEAPOLIS, MINN., *January 13, 1890.*

I have the pleasure of saying that Marchand's Peroxide of Hydrogen (medicinal) has been my favorite germicide for all abscessed cavities for many years. Have made tests as to its value as a germicide in our college laboratory, and have positive proof of its superiority over most of the popular agents for this purpose. I also use your formula of equal parts of H_2O_2 with glycerine for diphtheria. It is always my first application in specific vagina discharges. I use it for topical applications, and in its field it has first place with me.

F. A. DUNSMORE, M.D.,
226 W. 10th Street.

PITTSBURGH, PA., *January 13, 1890.*

After considerable experience in the treatment of various maladies with Marchand's Peroxide of Hydrogen (medicinal) and Glycozone, I find that they possess all the antiseptic and healing properties that are generally claimed for them. I have used them in catarrh and lung disease, in ulceration of the external ear, abscesses, old sores, varicose and other ulcers, ulceration of the rectum and cervix uteri, and in most cases with better results than I have obtained with any other specific.

J. S. DODGE, M.D.,
418 Penn. Avenue.

NEWARK, N. J., *January 14, 1890.*

I am both willing and glad to say that I have used Marchand's Peroxide of Hydrogen (medicinal) in its various combinations, and alone, in hay fever, diphtheria, and in the treatment of wounds, with great satisfaction to myself and to my patients. Further, I have not seen equally as good results with Peroxide of Hydrogen made by other firms.

B. H. B. SLIGHT, M.D.,
29 Chestnut Street.

DENVER, COL., *January 14, 1890.*

CH. MARCHAND, Esq.:

I am in receipt of your favor of the 3d inst. I do not believe in reputable physicians giving their endorsement to proprietary or secret preparations, for, as a rule, it is unprofessional and harmful. But I have no hesitancy in saying that I have used your Peroxide of Hydrogen quite extensively for nearly two years, and think it unquestionably the best antiseptic and cleansing remedy that I have ever used. Its property of dissolving morbid tissue, pus, and unhealthy mucus, while leaving the normal tissue unchanged, is unique.

I make constant use of it in the treatment of chronic Pharyngitis, Tonsillitis, Diphtheria, and kindred diseases.

T. W. MILES, M.D.,
1739 Stout Street.

WARREN, O., *January 15, 1890.*

I have used Marchand's Peroxide of Hydrogen (medicinal) for three or four years, and feel pleased with its action.

DR. O. A. PALMER.

NEW YORK, *January 16, 1890.*

CH. MARCHAND, Esq.: Yours received, and in reply would state that about a year ago we had some sample bottles of your Peroxide of Hydrogen (medicinal) and Glycozone, which we used on a severe case of burn with good effects. If you have been able to introduce your goods to our department through Dr. Rice, chemist, Bellevue Hospital, I would be glad to use, but am inclined to think that they come too high for such use.

DR. T. M. STRONG, *Chief of Staff,*
Dept of Public Charities and Correction; Homœopathic Hospital, W. I.

FULTONVILLE, N. Y., *January 17, 1890.*

It gives me much pleasure to speak very highly of the good qualities of Marchand's Peroxide of Hydrogen (medicinal) and Glycozone, both, and which I have used many times, and have yet to see a case not benefited by them. The first time I used Marchand's Peroxide of Hydrogen (medicinal) was upon a large, unhealthy ulcer of the leg, and I was simply astonished at the improvement made, and had never before seen such a change for the better, in so short a time, from the use of any outside agent. I consider it far superior to the bichloride of mercury, and with none of its disadvantages; and, when employed fresh, consider it *the best* agent we have in the treatment of all wounds.

HENRY W. POST, M.D.

THORNTON, MISS., *January 18, 1890.*

I have found both Marchand's Peroxide of Hydrogen (medicinal) and Glycozone very desirable aids in the treatment of ulcerating wounds and suppurating surfaces. Having used these preparations, I do not hesitate to recommend them as worthy of the highest consideration.

CH. C. THORNTON, M.D.

LITTLE FALLS, MINN., *January 20, 1890.*

CH. MARCHAND, Esq.: It is with pleasure that I give my appreciation of your Peroxide of Hydrogen (medicinal), which has given me the best results in germ diseases. I would feel very unsafe to meet a case of diphtheria, for example, without your preparation of H_2O_2 , which is my stronghold against microbes of all descriptions. I have found its inhalation to stop a paroxysm of asthma instantaneously.

R. CHAREST, M.D.

From my extended experience of two years with Marchand's Peroxide of Hydrogen (medicinal) in various cases of ulceration and inflammation of the throat and lungs, used in connection with the Pneumatic Cabinet Apparatus, I have been highly gratified with its effects, and am induced to extend its field of usefulness as far as possible.

B. F. KINGSLEY, M.D.

I say, unreservedly, that Ch. Marchand's Peroxide of Hydrogen (medicinal) is one of the essentials in my practice. I know of nothing that can take its place, and its place is a larger one than could have been thought possible a few years since.

C. T. STOCKWELL, M.D.

I have used Marchand's Peroxide of Hydrogen (medicinal) for two years, and am satisfied that the results obtained by its use internally are not equalled by any other therapeutic means that I have tried, when the cases are selected with ordinary diligence and skill. As a dressing to old sores and to operation wounds, I have used it freely and with satisfactory results, especially to a case of amputation of the left breast and axillary glands, in a woman aged seventy-three. The operation was very extensive, as many axillary and other neighboring glands were involved, and the muscular tissue was so involved as to require removal down to ribs. The dressing was Marchand's Peroxide of H., in two volumes strength; no pus, and a favorable course until granulation set in.

The operation was performed June 22, 1889, progressed uninterruptedly, and at this time shows no sign of returning. Should I ever have an occasion to again operate for cancer, I should certainly use Marchand's Peroxide of H. as a dressing, as I believe it had some influence on the favorable result, particularly its non-recurrence at this date, for there were a number of minute infiltration points that were not removed by operation, and had something not destroyed they would have been manifest ere this time.

JAMES F. THOMAS, M.D.

I have used Marchand's Peroxide of Hydrogen (medicinal) in connection with internal treatment for several cases of Stomatitis, Bronchitis, Sore Throat, and commencing Phthisis, with gratifying results.

BABYLON, N. Y., *January 25, 1890.*

A. J. WOODRUFF, M.D.,
32 Main Street.

My experience with Marchand's Peroxide of Hydrogen (medicinal), in the treatment of Diphtheria, has been most favorable, and I consider it to be the most powerful and harmless of all bactericides. I have used it in the treatment of Pertussis with most gratifying results. I have used Glycozone in the treatment of Chronic Gastric Catarrh, and found it to be a valuable remedy.

PH. RICORD, M.D.,
433 High Street.

In using Marchand's Peroxide of Hydrogen (medicinal) I have had the happiest results. In Diphtheria, as a spray, it has no equal. It has also done good work for offensive discharges, and as an external dressing it proved satisfactory.

BROOKLYN, N. Y., *January 27, 1890.*

GEO. H. DOTY, M.D.,
48 Concord Street.

I will only be too well pleased to add my voice to the thousands of others in praise of Marchand's Peroxide of Hydrogen (medicinal) and Glycozone. They certainly fill a niche in our *materia medica* that cannot be filled as well by any other preparations. I use them quite extensively in my practice. Peroxide of Hydrogen is the best antiseptic yet discovered; Glycozone, in its proper place, is equally as beneficial to humanity.

PORTLAND, ORE., *February 1, 1890.*

R. H. RANDOLPH, M.D.,
313½ First Street.

Marchand's Peroxide of Hydrogen (medicinal) has been a marked success in a number of cases of chronic, purulent inflammations of the middle ear, and Naso-pharyngeal Catarrh. It has also been of practical value in some cases of Phthisis.

419 PINE STREET, PHILADELPHIA, PA., *February 1, 1890.*

WM. W. VAN BAUN.

My experience with Marchand's Peroxide of Hydrogen (medicinal) and Glycozone has been very satisfactory. I have been using it in cases of pulmonary and bronchial affections. In asthma I have found it most useful.

239 KING STREET, WEST, HAMILTON, ONT., *February 4, 1890.*

W. G. STARK, M.D.

I have employed in my practice Marchand's Peroxide of Hydrogen (medicinal) with results very satisfactory to me. In all conditions characterized by pus formation I have been invariably pleased with its favorable action. I have used this preparation in ear troubles, womb troubles, carbuncles, and affections of the throat, where there existed more or less suppuration, and, as I say, with invariably good results. I do not, of course, expect it to do everything, but it certainly paves the way to successful treatment in all disorders associated with suppuration. I am not a

NEW ORLEANS, LA., *February 8, 1890.*

subscriber to the germ theory of disease, and can account for its action and that of kindred remedies on very different and, to me, more satisfactory grounds. This is too considerable a question to be more than hinted at here. . . .

7 North Street, Lafayette Square.

DR. C. H. TEBAULT.

400 S. ALABAMA STREET, INDIANAPOLIS, IND., *February 10, 1890.*

I consider Marchand's Peroxide of Hydrogen (medicinal) the best to be found for medical use. Glycozone is all you claim. Both are invaluable agents for the administration of ozone, the great germicide and tissue builder.

B. P. WELLS, M.D.

814 Seventeenth Street, N. W.,
WASHINGTON, D. C., *February 15, 1890.* }

CH. MARCHAND, Esq.:

I presume I have used as much Peroxide of Hydrogen (medicinal) and Glycozone in various venereal and skin affections as any of our physicians, and it is only justice to you to say that I have found your preparations remarkably effective—I may even say brilliantly so. There is hardly a day that I do not make use of either one or the other of them.

In Gonorrhœa, a mixture of your Peroxide is the best injection I have ever used, and in slow-closing fistulæ and sinuses the Glycozone has served me admirably. I trust the profession appreciate these preparations as I do.

DR. H. C. YARROW.

HUDSON, MICH., *February 19, 1890.*

I would say that I have never found anything equal to Marchand's Peroxide of Hydrogen (medicinal) and Glycozone, especially in the treatment of Diphtheria and private diseases. In Diphtheria it is a specific.

F. H. STROUD, M.D.

1520 LAWRENCE STREET, DENVER, COL., *February 19, 1890.*

I have used Marchand's Peroxide of Hydrogen (medicinal) and Glycozone in the treatment of abscesses, ulcerations, and catarrhal affections, with uniformly good results. They are harmless and powerful bactericides.

DR. C. H. SCOTT.

1266 TWENTY-THIRD AVE., OAKLAND, CAL., *February 10, 1890.*

I began using Marchand's Peroxide of Hydrogen (medicinal) three years ago, and have found it a most valuable remedy in both acute and chronic inflammations of mucous membranes. It never fails me in giving results, and in gonorrhœa I consider it almost a specific.

N. K. FOSTER, M.D.

MR. CHARLES MARCHAND.

Dear Sir: I have continued to use your Peroxide of Hydrogen (medicinal) during the past four years, and have always found it reliable for its uniformity, stability, purity, and strength. I use no other.

Respectfully yours,

W. W. BLACKMAN, M.D.,
519 Clinton Avenue.

BROOKLYN, *April 16, 1890.*